

CITY OF PHILADELPHIA

WATER DEPARTMENT ARAMARK TOWER 1101 Market Street Philadelphia, PA 19107-2994 DEBRA A. McCARTY Water Commissioner

April 26, 2016

Mr. Cosmo Servidio Regional Director PADEP – Southeast Region 2 E. Main Street Norristown, PA 19401-4915

Dear Mr. Servidio,

I'm writing to provide information pertaining to the Philadelphia Water Department's (PWD's) Lead and Copper Rule compliance from 1992 to present. The Department has been in compliance since 1992 and maintains its compliance through a coordinated and comprehensive effort including working with the Pennsylvania Department of Environmental Protection (PADEP) and other city agencies.

In 1992, PWD conducted an exhaustive materials survey that is described in the attached document. As you can see from review of this material, PWD conducted the materials survey in accordance with the state (section 109.1103g) and federal rules (40 CFR 141.86, and 40 CFR 141.42) (see attached regulatory sections).

Since 1997 we have achieved optimized corrosion control as permitted by PADEP using zinc orthophosphate. In addition, PWD uses chloramines and has not switched water sources in many decades leading to a stable water quality that has a positive oxidation reduction potential (ORP) leading to a stable lead scale formation in lead lines. A stable lead scale means the zinc orthophosphate has properly coated and pacified the lead pipe and prevents lead from leaching into the water. The Department has been working closely with PADEP and communicating about our compliance program since inception of the Lead and Copper Rule (LCR).

More recently, PWD conducted efforts in 2014 as part of our triennial sampling for Lead and Copper. A memo describing the recruitment effort is attached. To summarize, we contacted 8,340 customers with properties that we identified as potentially having lead service lines (using past participants and focusing on homes built before 1950). This was in addition to solicitation to PWD and City employees about the program and targeted outreach to past participants in the lead sampling program.

Unfortunately, despite our efforts, only 334 persons responded. After examining and confirming the premise plumbing for lead service lines and lead solder, only 192 homes qualified in Tier 1 or 3, and only 134 participants ended up collecting samples. Of the 134 homes all 45 Tier 1 homes collected samples.

Under the state's rule (109.1103g) it states, "The water supplier shall select all Tier 1 sample site locations, if possible. A community water system with an insufficient number of Tier 1 sampling sites shall complete its sampling pool with Tier 2 sites. Tier 3 sites shall be used to complete the sampling pool if the number of Tier 1 and Tier 2 sites is insufficient."

It is important to note that PWD had 45 Tier 1 properties and was only required to collect from 50 homes in total. However, PWD has always chosen to go beyond this requirement as I will subsequently explain. Also, since 1992 it has been difficult to get property owners with lead service lines (LSLs) to remain in the program because they a) move, b) pass away, c) have their lead service replaced, or d) decline to participate for reasons such as getting repeated samples of low or no lead levels and thus are not concerned. We also have not been able to enroll Tier 2 multifamily dwellings with lead service lines since the beginning of the program in 1992 as they are usually owned by third parties uninterested in giving the City access to their property for a variety of reasons.

During the most recent 2014 sampling we identified 7 homes above 15 ppb, but the 90<sup>th</sup> percentile for the entire 134 homes was 5 ppb below the Rule's action level. As is our standard protocol we immediately inform those residents with lead results above 15 ppb and attempt to conduct follow up investigations at the premises to identify the source of lead and educate the customers.

Of those 7 homes, follow up investigations we were only able to observe repeatable elevated lead concentrations in 3 homes. Of those 3 homes with elevated lead during follow up studies using such sampling protocols<sup>1</sup> as profile sampling, we identified that 2 of the homes had elevated results due to the faucets and associated fixtures. The remaining third home was not able to identify a specific source definitively; results suggested that the lead was coming from the plumbing between the faucet and the meter.

It is also important to note that of those 7 homes with lead levels over the 15ppb <u>only 2</u> <u>homes had lead service lines (Tier 1); the remaining 5 had copper with lead solder (Tier 3)</u>. This further suggests that proper corrosion control can provide significant protection for lead service lines and that copper plumbing with lead solder can be as significant a source of lead as lead service lines (Also note that with newly enrolled customers, it is typically impossible to confirm the age of the solder and, as a result, we label them as Tier 3 which could lead to under-reporting of Tier 1 homes from which samples are collected.).

This is further demonstrated in the Table 1 which shows the breakdown of the 90<sup>th</sup> percentile during previous lead sampling periods by tier as well as comparing only lead service lines. As shown, since 2008 there is virtually no difference in the 90<sup>th</sup> percentile between Tier 1 homes (LSLs and 1982 to 1986 lead solder copper plumbing), lead service line homes alone, or Tier 3 homes (copper plumbing with lead solder pre 1982). This similarity between results in tiers is because we believe that we have optimized corrosion control and thus the lead scale is stable and lead service lines and lead solder are equally pacified. Over 25 years later, this data suggests optimized corrosion control has made the risk of these two tiers nearly identical.

<sup>&</sup>lt;sup>1</sup> Profile samples involve taking sequential samples of water to track the water from the tap to the main to identify where the lead source may be located such as faucet, plumbing, or service line

	All Ho	omes	Only Tier 1 homes		Only Homes w/LSL		Only Tier 3 Homes	
	# of	90 <sup>th</sup>	# of	90 <sup>th</sup>	# of	90 <sup>th</sup>	# of	90 <sup>th</sup>
	homes	%ile	homes	%ile	homes	%ile	homes	%ile
1992 A	162	21 ppb	162	21 ppb	81	31 ppb	0	
1997 B	143	15 ppb	143	15 ppb	71	19 ppb	0	<b>ant ing int</b>
1997 A	118	14 ppb	118	14 ppb	60	16 ppb	0	
1997 B	108	11 ppb	108	11 ppb	55	11 ppb	0	
1998	79	10 ppb	79	10 ppb	37	11 ppb	0	
1999	59	9 ppb	59	9 ppb	29	8 ppb	0	
2002	63	13 ppb	54	13 ppb	27	30 ppb	9	7 ppb
2005	107	9 ppb	33	20 ppb	21	24 ppb	74	8 ppb
2008	97	6 ppb	43	6 ppb	33	6 ppb	54	6 ppb
2011	92	6 ppb	38	7 ppb	28	8 ppb	54	5 ppb
2014	134	5 ppb	45	6 ppb	35	8 ppb	89	3 ppb

# Table 1 – Comparison of 90<sup>th</sup> Percentile Lead Concentrations between All Homes, Only Tier 1, Lead Service Line Only, and Only Tier 3 Homes

A – January – June B – July - December

In addition to our analysis of our 2014 sampling data, additional sampling conducted through customer requested samples, CDC lead studies in Philadelphia in 2014, and comprehensive review of our data since 1997 all provide multiple sources of evidence demonstrating Philadelphia has a stable system.

The CDC study in Philadelphia during the summer of 2014 supports Philadelphia's position that we are in compliance with the LCR. The CDC studied Philadelphia's Port Richmond area (zip codes 19125 & 19134) from July 14-25, 2014 where former lead smelting facilities were historically located (see attached study). Samples were collected by just grabbing and filling samples without aerator removal or any flushing. Analysis of the properties in this area also shows it has a high concentration of homes that are pre-1950 and therefore likely to have lead service lines (LSLs). The CDC results were very complementary to PWD's own citywide compliance sampling for 2014. The CDC found the highest concentration was 3.9 ppb with a 90<sup>th</sup> percentile of 1.4 ppb for 120 samples.

Since January 1997 we have collected 857 samples with only 50 samples (6%) over 15 ppb. Of the 50 samples over 15 ppb, only 24 (48%) of the elevated samples were from homes with LSLs. From 2011 to 2015 PWD collected an additional 155 lead samples (from 36 homes) at customer requests and found only 3% (4 samples) of the samples were over 15 ppb despite the use of profile sampling that targets water in contact with LSLs. None of the samples over 15 ppb were from homes with LSLs. Combining all of the samples PWD has collected since January 1997 and the CDC study, there were over 1012 samples collected for lead. Had PWD not sought additional sites to sample, only the LCR only required that 550 samples be collected over this same time period. The Department went above and beyond to get more samples than required to characterize our system and confirm that our corrosion control was effective.

Moving forward, PWD has already taken, or plans to take the following steps to reduce lead in our customers' drinking water:

- Enhancing property owner and customer awareness of lead risks and identification of LSLs through letters and electronic information.
- Promulgating Regulation changes to offer a \$50 credit on the water bill for participation in the lead sampling program to boost the number of homes with LSLs in the program.
- Offering to replace LSLs from the main to the owner's meter during PWD water main replacements through the capital program.
- Providing a no interest loan to homeowners to replace their lead service line.
- Continuing to provide free lead testing at customers' requests.
- Continuing to work with the Philadelphia Department of Public Health on lead related initiatives.
- Contacting all registered community organizations in the City to offer to make a
  presentation on lead in drinking water at one of their meetings and provided the link to our
  web site on lead.
- Enhancing information that is available on our web site.
- Started collecting broader confirmatory information on the location of lead service lines.
- Participating nationally in water industry education and planning for addressing lead in water issues.

This coming year PWD intends to work closely with PADEP and EPA through the preparation and implementation of our triennial sampling to obtain input on the sampling program outreach and participation, sampling protocols, results, and follow up. We anticipate this discussion to start this summer and occur quarterly throughout 2017. We also want to be very clear that PWD will follow the guidance for sampling methods recommended by PADEP and EPA in 2017 in order to avoid confusion moving forward.<sup>2</sup>

To reiterate, the Water Department has been and still maintains compliance with the LCR and meets all the state and federal requirements. We continue to invest in a robust scientific, operational, and educational effort to protect our citizens from lead. If you have any questions or need to discuss this issue, I and staff are happy to meet at any time.

Sincerely,

Debra A. McCarty Water Commissioner

<sup>&</sup>lt;sup>2</sup> Though guidance suggests leaving the aerator on, PWD has historically sampled with the aerator off in order to catch higher concentrations of particulate lead than if we simply left the aerator on. In order to avoid any confusion in the future, PWD will leave the aerator on during its required 2017 sampling.

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#### THE PHILADELPHIA WATER DEPARTMENTS

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#### MATERIALS SURVEY

#### CONDUCTED IN ACCORDANCE WITH THE U.S. EPA LEAD AND COPPER RULE

The Philadelphia Water Department (PWD) in anticipation of the passage of the final Lead and Copper regulations, formed a Lead Rule Implementation (LRI) Task Force. The LRI was charged with locating a pool of targeted sample homes with the criteria being post- 1982 lead solder plumbing and homes with lead service lines (LSL).

As of January 1, 1986, the Philadelphia Department of Licenses and Inspections revised the Philadelphia Plumbing Code by limiting the lead content of solder to 0.2% when employed in joining copper pipes for any potable water system (Appendix I). This Lead Ban limited the 'window' for targeting lead solder homes.

In February 1991, the LRI decided to locate 200 targeted homes for the sample pool. A recruitment program consisting of the solicitation of PWD employees, former employees, Water Revenue employees, customers, etc. was developed. Questionnaires pertaining to age of home, type of home, plumbing changes, etc. were mailed to these targeted groups (Appendix II). The questionnaire was also mailed to homes constructed from 1982 through 1986 which was obtained by researching Building Permits for that time period.

A breakdown of solicitations versus responses is shown in Figure 1. Customer inquiries had the highest return percentage, followed by the post-1982 construction. The responses were categorized by LSL, lead solder, or not fitting the Lead Rules criteria for a targeted sampling home. Those responses fitting the criteria were contacted, and appointments scheduled for home inspection (Appendix III).

PWD construction inspectors and customer service representatives were trained for the task of home inspection. Inspections consisted of asking general questions to verify information that was returned in the questionnaire, measuring home plumbing system lengths, collecting solder scrapings for analysis, and checking service line material for lead (Appendix IV).

Figures 2 & 3 break down the number of solicitations to responses to appointments made to candidates, by group and as a whole. The candidates verified by home inspection were then asked to volunteer for the Lead & Copper Rule sampling program.

Although this initial effort encompassed thousands of solicitations, the goal of 200 targeted homes for the sample pool was not reached. In an effort to reach the goal, advertisements

#### Page 2 Materials Survey Lead and Copper Rule

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were run in major and local newspapers with a total estimated circulation of 2.5 million (Appendix V). Also, messages on Water & Sewer bills soliciting volunteers reached 190,000 customers.

The final outcome of this massive solicitation effort produced 162 targeted homes for Philadelphia's Lead and Copper Rule sampling pool. The sampling pool included greater than 50 lead solder homes and greater than 50 LSL homes. According to the Lead and Copper Rule Guidance Manual, Volume I: Monitoring, the targeted home sampling pool is a Category A, Tier I pool, which is the preferred ranking for the Rule.

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February 2021

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APPENDIX I

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PHILADELPHIA DEPARTMENT OF

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#### DEPARTMENT OF LIEADINGARY 2024 INC. Municipal Compas Building Philapsiphia Fa

HENRY G. HERLING Commissioner

CLARENCE E. MOSLEY Deputy Commissioner

DAVID WISMEE Deputy Commissioner

#### November 14, 1985

Ms. Gincer Ertz, Librarian WATER DEPARTMENT #1 - Reading Center ; 3rd Floor

TO ALL PLUMBING ASSOCIATIONS AND SUPPLIERS

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Please be advised that the following Plumbing Code Revision will become effective January 1, 1986. Chapter 8-300 - Section 6-308 - applicable to approved solder/solder flux, has been revised to conform to ASTM Standard B-32-83, Alloy Grade SN 96 or SB 5 limiting lead content to 0.20% maximum and cadmium content to 0.03% maximum when employed in joining copper pipes for any potable water system. Solder containing lead exceeding this requirement may be continued for use on non-potable water systems.

In addition, Section 8-304 requires that approved solder/solder fluxes used in potable water systems be labelled to reflect that they contain 0.20% or less lead.

The Department of Licenses and Inspections, in cooperation with the Departments of Health and Water-will monitor the use of a solder/solder fluxes in the joining of the potable water piping system for the purpose of enforcement of this regulation.

JOHN J. ORAZALLO

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PLUMBING CODE SUPERVISOR FLUMBING UNIT

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#### APPENDIX II

### PHILADELPHIA WATER DEPARTMENT

### RECRUITMENT QUESTIONNAIRE

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	WATER SAMPLING PROGRAM FOR LEAD
PLEA	SE COMPLETE THE FOLLOWING QUESTIONS AND RETURN TO US BY APRIL 12.
ر ۲۵	ou live in a one-family residence?YesNo
Wher	e do you live? House Apartment
When	was your house constructed? before 1950`1950-1982Jan. 1983 - Jan. 1986 after Jan. 1986Don't Know
Do y	ou have a water service line (from the water main into your residence) made
of 1	ad? Lead service lines were usually installed in houses before the 1950s
	Yes No Don't Know
Have exis	you installed new kitchen water supply plumbing or made repairs to your ing kitchen water supply plumbing between January 1983 and January 1986? YesNo Don't Know
Have exis  Name	you installed new kitchen water supply plumbing or made repairs to your ing kitchen water supply plumbing between January 1983 and January 1986? Yes No Don't Know
Have	you installed new kitchen water supply plumbing or made repairs to your
exis	ing kitchen water supply plumbing between January 1983 and January 1986?
Name	Yes No Don't Know
Home	Address
Have	you installed new kitchen water supply plumbing or made repairs to your
exis	ing kitchen water supply plumbing between January 1983 and January 1986?
Name	YesNoDon't Know
Home	Address
Zip	iode Home Phone No
Have	you installed new kitchen water supply plumbing or made repairs to your
exis	ing kitchen water supply plumbing between January 1983 and January 1986?
Name	Yes No Don't Know
Home	Address
Zip	iode Home Phone No
Best	time to contact you at home
Have	you installed new kitchen water supply plumbing or made repairs to your
exis	ing kitchen water supply plumbing between January 1983 and January 1986?
Name	Yes Don't Know
Home	Address
Zip	iode Home Phone No
Best	time to contact you at home
Work	Phone No
Have	you installed new kitchen water supply plumbing or made repairs to your
exis	ing kitchen water supply plumbing between January 1983 and January 1986?
Name	Yes Don't Know
Home	Address
Zip	code Home Phone No
Best	time to contact you at home
Work	Phone No
Best	time to contact you at work
Have	you installed new kitchen water supply plumbing or made repairs to your
exis	ing kitchen water supply plumbing between January 1983 and January 1986?
Name	YesNoDon't Know
Home	Address
Zip	codeHome Phone No
Best	time to contact you at home
Work	Phone No
Best	time to contact you at work
Do y	u know of any one else who would be interested in participating in this
prog	am? If yes, please indicate:
Have	you installed new kitchen water supply plumbing or made repairs to your
exis	ing kitchen water supply plumbing between January 1983 and January 1986?
Name	YesNoDon't Know
Home	Address
Zip	code Home Phone No
Best	time to contact you at home
Work	Phone No
Best	time to contact you at work
Do y	u know of any one else who would be interested in participating in this
prog	am? If yes, please indicate:
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Response Attachment PA = 13 A

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Please return this form in the envelope provided. Due to budgetary constraints, we cannot provide postage.

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# HOW TO CHECK YOUR WATER SERVICE LINE FOR LEAD

Water service lines made of lead were generally not installed in homes built after 1950. Here are four easy steps for you to follow to check your service line for lead:

February 2021

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#### STEP 1

Find your water meter.

STEP 2

What is the color of the pipe that goes through the wall and into the water meter?

What is the color of the pipe on the other side of the water meter?

#### HINTS

- If the color of the pipe is GRAY, SILVER or DULL, the pipe could be lead.
- If the color of the pipe is BRASS, BRONZE or BROWN, the pipe is probably copper.

### STEP 3

Using a key, carefully scratch both pipes. What is the color exposed on each pipe when you have scratched it?

Be careful not to scratch painted or rusty pipes too strongly to prevent any damage.

HINTS:

If the color is SHINY and SILVER, the pipe is probably lead.

- If the color is BRASS, BRONZE or BROWN, the pipe is copper.
- If the color is still DULL and GRAY, the pipe is probably galvanized iron.

### STEP 4

Lead pipe is very SOFT. Gently press your fingernail against the pipe. If an indentation appears, the pipe is probably lead.

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#### APPENDIX III

### HOME INSPECTION APPOINTMENTS

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Response A	Attachment PA-I-13.A		Febru	uary 2021
MEMO	DRANDUM	CITY	OF	PHILADELPH
TO : FROM : Sugject:	Distribution Joan Anne Przybylopicz, Administrative Technician Public Affairs LRI TASK FORCE UPDATE	DATE		12/11/91
	Letters to all customers who qualify for the Water Program for Lead have been prepared and will be man Friday,/December 13. Letters to all customers who qualify are in the process of being prepared and w mailed early next week.	Sampli Lled by do not vill be	ing r	
	Attached are samples of the various recruitment le the survey form, information on "How to Check Your Service Line for Lead"/"About the Water Sampling P for Lead", and letters of acceptance into the prog which we have used as of 12/11/91.	tters, Water rogram ram,		
	Listed below is a breakdown of the number of custom have contacted by letter for recruiting purposes a 12/11/91. This does not include the number of pho- made by Customer Information Service Representativ	mers we s of ne call es.	e ls	
	Water Department Employees 2,3	00		
	Former Water Department Employees 3	25		
	Water Revenue Employees 4	00		
	Licenses & Inspections Permit List 2 (1983-1986)	31		
	Customers Contacting Customer Information 1 for Lead Information, Lead Testing Lab List, & Water Quality Information (prior to 5/10/91)	38		
	Customers Contact Customer Information for Lead Information & Lead Testing Lab List (between 5/10/91 - 6/28/91)	52		
	Referrals from Survey Forms 1 (between 5/10/91 - 6/28/91)	53		
·	Streets where BLS confirmed lead hits as 8 part of recruitment process	77		
	BLS list of houses with lead service lines	12		
	BLS List of houses with lead service lines (prepared by Cybil)	57		
•	Streets with possible lead service lines 11 provided by Ed Grusheski & Jack Xenakes	20		
	Meter Shop List (as of 10/30/91)	57		$\langle \cdot \rangle$
	Ferrule List per Robin (as of 12/6/91)	20	• 	ے میں اور
•	TOTAL RECRUITMENT LETTERS SENT (as of $12/11$ ) - 4,7	42		

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#### Distribution:

Drew Brown Al Horn Terry Iacobucci Barbara Kennedy Gerson Korntreger Howard Neukrug Matt Smith Bill Wankoff

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All Water Department Employees Variation of PR-173



Attachment PA-1-13 A

### CITY OF PHILADELPHIA

WATER DEPARTMENT ARA Tower at Reading Center Philadelphia, Pa. 19107-2994

JOHN PLONSKI WATER COMMISSIONER

March 19, 1991

Dear Water Department Employee:

Are you concerned about the possibility of lead entering your home drinking water? If so, you may want to volunteer for a new water sampling program our Bureau of Laboratory Services will be conducting to monitor lead levels in homes. The program will begin in October 1991.

If you participate in the program, you will be asked to do the sampling two (2) times a year. We will train you how to take the samples properly. Our laboratory will analyze the samples and provide you with the results, free of charge.

If you are interested in volunteering for this program, please:

- complete the enclosed form
- fold and staple it
- use the Water Department's inter-office mail system

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• return it to us by APRIL 12.

We will schedule a meeting with you before the program begins to:

- confirm the presence of lead materials in your kitchen water supply plumbing or service line, and
- show you how to do the sampling.

Thank you for your cooperation. If you have questions about this program, please call our Customer Information Hotline at 592-6300.

Sincerely, Humarth

KUMAR KISHINCHAND General Manager Planning and Engineering

JOAN BECKER

General Manager Public Affairs

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Enclosures

February 2021

Response Attachment PA-I-13.A

Former Water Department Employees Variation of PR-173



#### PHILADELPHIA F

WATER DEPARTMENT ARA Tower at Reading Center Philadelphia, Pa. 19107-2994

JOHN PLONSKI WATER COMMISSIONER

March 19, 1991

Dear Former Water Department Employee:

Are you concerned about the possibility of lead entering your home drinking water? If so, you may want to volunteer for a new water sampling program our Bureau of Laboratory Services will be conducting to monitor lead levels in homes. The program will begin in October 1991.

If you participate in the program, you will be asked to do the sampling two (2) times a year. We will train you how to take the samples properly. Our laboratory will analyze the samples and provide you with the results, free of charge.

If you are interested in volunteering for this program, please:

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- complete the enclosed form 8
- use the enclosed envelope 8
- attach postage 6
- return it to us by APRIL 12.

We will schedule a meeting with you before the program begins to:

- confirm the presence of lead materials in your kitchen
- water supply plumbing or service line, and
- show you how to do the sampling.

Thank you for your cooperation. If you have questions about this program, please call our Customer Information Hotline at 592-6300.

Sincerely. Humar D

KUMAR KISHINCHAND General Manager Planning and Engineering

JOAN BECKER

General Manager Public Affairs

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Enclosures

#### "AN EQUAL OPPORTUNITY EMPLOYER'

Response Attachment PA-I-13.A	All othe PR-173	r customers	February 2021
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CITY	O F	PHILAD	ELPHIA

WATER DEPARTMENT ARA Tower at Reading Center Philadelphia, Pa. 19107-2994 JOHN PLONSKI WATER COMMISSIONER

July 17, 1991

Dear Water Department Customer:

Are you concerned about the possibility of lead entering your home drinking water? If so, you may want to volunteer for a new water sampling program our Bureau of Laboratory Services will be conducting to monitor lead levels in homes. The program will begin in January 1992.

If you participate in the program, you will be asked to do the sampling two (2) times a year. We will train you how to take the samples properly. Our laboratory will analyze the samples and provide you with the results, free of charge.

If you are interested in volunteering for this program, please:

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- complete the enclosed form
- use the enclosed envelope
- e attach postage
- return it to us within two (2) weeks.

We will schedule a meeting with you before the program begins to:

- confirm the presence of lead materials in your kitchen water supply plumbing or service line, and
- show you how to do the sampling.

Sincerely,

KUMAR KISHINCHAND General Manager Planning and Engineering

JOAN BECKER General Manager Public Affairs

KK/JAP/dc

Enclosures

"AN EQUAL OPPORTUNITY EMPLOYER"

Response Attachment PA-I-13.A

Referrals from Lead Surveys PR-173

February 2021

JOHN PLONSKI

WATER COMMISSIONER



#### OF PHILADELPHIA $\mathbf{Y}$ Τ

WATER DEPARTMENT ARA Tower at Reading Center Philadelphia, Pa. 19107-2994

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Dear 🗸

Are you concerned about the possibility of lead entering your home drinking water? If so, you may want to volunteer for a new water sampling program our Bureau of Laboratory Services will be conducting to monitor lead levels in homes. The program will begin-in Öctober 1991.

If you participate in the program, you will be asked to do the sampling two (2) times a year. We will train you how to take the samples properly. Our laboratory will analyze the samples and provide you with the results, free of charge.

If you are interested in volunteering for this program, please:

complete the enclosed form

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- use the enclosed envelope
- attach postage
  - return it to us by May 24.

We will schedule a meeting with you before the program begins to:

confirm the presence of lead materials in your kitchen water supply plumbing or service line, and show you how to do the sampling.

abla of abla recommended your name to us as a possible candidate for this new water sampling program. If you have questions about this program, please call our Customer Information Hotline at 592-6300.

Sincerely,

KUMAR KISHINCHAND General Manager Planning and Engineering

JOAN BECKER General Manager Public Affairs

Enclosures

KK/JB/dc

"AN EQUAL OPPORTUNITY EMPLOYER"

Meter Shop List PR\_106

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November 27, 1991

Dear Water Department Customer:

In January 1992, our Bureau of Laboratory Services will begin a new water sampling program. This program will help us monitor lead levels entering drinking water from homeowners' water service lines made of lead. The service line runs from the water main, in the street, into your home. We believe that your home may have a lead service line based on information received from our Meter Shop employees when they replaced your water meter.

If you are interested in volunteering for this program, please call our Lead Task Force Members at 592-6300 by <u>December 6, 1991</u>. They will schedule an appointment with you to visit your home so that we may confirm the presence of a lead service line and to explain the water sampling program in more detail. If you agree to participate in this program, we will analyze your drinking water for lead levels and provide you with the results, free of charge, two times a year.

Whether you participate in this program or not, we strongly recommend that you read the enclosed brochure, "Lead, Your Drinking Water and You " and carefully follow its guidelines to reduce your lead exposure risk. We have also enclosed:

- helpful hints for you to determine if your water service line is made of lead,
- more information about the water sampling program, and
- a list of certified, commercial laboratories that can test your water for lead levels for a fee.

We hope you will agree to participate in this program and look forward to hearing from you soon.

Sincerely,

#### JOAN A. PRZYBYLOWICZ

Public Affairs

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Response Attachment PA-I-13.A - Ferrule List - 12/6/91 (Robin) Variation of PR-106

### CITY OF PHILADELPHIA

WATER DEPARTMENT ARA Tower at Reading Canter Philadelphia, Pa 19107-2994

JOHN PLONSKI WATER COMMISSIONER

December 6, 1991

Dear Water Department Customer:

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In January 1992, our Bureau of Laboratory Services will begin a new water sampling program. This program will help us monitor lead levels entering drinking water from homeowners' water service lines made of lead. The service line runs from the water main, in the street, into your home. We believe that your home may have a lead service line.

If you are interested in volunteering for this program, please call our Lead Task Force Members at 592-6300 by December 12, 1991. They will schedule an appointment with you to visit your home so that we may confirm the presence of a lead service line and to explain the water sampling program in more detail. If you agree to participate in this program, we will analyze your drinking water for lead levels and provide you with the results, free of charge, two times a year.

Whether you participate in this program or not, we strongly recommendthat-you read the enclosed brochure, "Lead, Your Drinking Water and You " and carefully follow its guidelines to reduce your lead exposure risk. We have also enclosed:

- helpful hints for you to determine if your water service line is made of lead,
- more information about the water sampling program, and
- a list of certified, commercial laboratories that can test your water for lead levels for a fee.

We hope you will agree to participate in this program-and look forward to hearing from you soon.

Sincerely,

JOAN A. PRZYBYLOWICZ Public Affairs

JP/dc

Customers contacting Customer Information after Lead Program recruiting began.



PR-148

### CITY OF PHILADELPHIA

WATER DEPARTMENT ARA Tower at Reading Center Philadelphia, Pa 19107-2994 June 3, 1991 JOHN PLONSKI WATER COMMISSIONER

Dear Water Department Customer:

If you participate in the program, you will be asked to do the sampling two -(2) times a year. We will train you how to take the samples properly. Our laboratory will analyze the samples and provide you with the results, free of charge.

If you are interested in volunteering for this program, please:

4

- ° complete the enclosed form
- ° use the enclosed envelope
- ° attach postage
- ° return it to us by June 21st

We will schedule a meeting with you before the program begins to:

- ° confirm the presence of lead materials in your kitchen water supply plumbing or service line, and
- ° show you how to do the sampling.

Thank you for your cooperation. If you have questions about this program, please call our Customer Information Hotline at 592-6300.

24

Sincerely,

KUMAR KISHINCHAND General Manager Planning and Engineering

JOAN BECKER General Manager Public Affairs

KK/JAP/dg

Enclosures

Customers who contacted Customer Information before the Lead Program for recruiting began.

Variation of PR-148



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### CITY OF PHILADELPHIA

JOHN PLONSKI WATER COMMISSIONER

March 19, 1991

Dear Water Department Customer:

During the past year or so, you contacted us for information concerning the possibility of lead entering your home drinking water. If you are still concerned, you may want to volunteer for a new water sampling program our Bureau of Laboratory Services will be conducting to monitor lead levels in homes. The program will begin in October 1991.

If you participate in the program, you will be asked to do the sampling two (2) times a year. We will train you how to take the samples properly. Our laboratory will analyze the samples and provide you with the results, free of charge.

If you are interested in volunteering for this program, please:

- complete the enclosed form
- use the enclosed envelope
- attach postage
- return it to us by APRIL 12.

We-will-schedule a meeting with you before the program begins to:

- confirm the presence of lead materials in your kitchen
- water supply plumbing or service line, and
- show you how to do the sampling.

Thank you for your cooperation. If you have questions about this program, please call our Customer Information Hotline at 592-6300.

Sincerely, iwav

KUMAR KISHINCHAND General Manager Planning and Engineering

JOAN BECKER

General Manager Public Affairs

KK/JAP/jes

Enclosures

### REPESMIOR ANDUM

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DATE 10/30/91

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) : Theresa Iacobucci, Supv., BLS

 $tom : Ernest M. Poaches, Mgr., Metering <math>\mathcal{E}, \mathcal{P}$ .

BJECT: Properties with Lead Service Lines

This is a list of lead service lines we complied while servicing water meters.

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98 addressess reducted

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RIC 3/17/16

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APPENDIX IV

### HOME INSPECTION DATA

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**TO** 

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#### APPENDIX V

### RECRUITMENT ADVERTISEMENT

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1222 <u>CIN P</u>TACE



1EMORANDUM	CITY OF PHILADELPHIA February 2021
> i soo Distribution	DATE 3/18/92
See Distribution	chnician, Public Relations
BUECT: ADVEDTISING FOR RECENTING VOLUNTEERS FOR	LEAD PROGRAM
Joanne Dahme has placed the attached ad i publication date and approximate circulat Total circulation is <u>2,354,246</u> .	in the newspapers listed. The expected tion for each newspaper is indicated.
<u>The Philadelphia Inquirer</u> (Metro Section)	Mt. Airy Times Express Wednesday, March 25 - 15,000
Wednesday, March 18 - 508,662 Sunday, March 22 - 986,663	Northeast Breeze Thursday, March 26 – 20,000
Philadelphia Daily News Wednesday, March 18 - 223,633 Saturday, March 21 - 131,968	<u>Olney Times</u> Thursday, March 26 - 25,000
<u>The Bridesburg Bulletin</u> Saturday, April 11 - 7,000	<u>Overbrook Press</u> Thursday, March 26 – 23,000
<u>The Chestnut Hill Local</u> Wednesday, March 25 - 10,400	<u>The Roxborough Review</u> Wednesday, March 25 - 23,500
<u>The Welcomat</u> Wednesday, March 25 - 61,900	<u>South Phialdelphia Review Chronicle</u> Thursday, March 26 – 76,000
<u>Fishtown Star</u> Wednesday, March 25 - 12,500	Southwest Globe-Times Thursday, March 26 18,500
<u>Germantown Paper</u> Wednesday, March 25 - 7,500	<u>Northeast Times</u> Wednesday, March 25 – 116,020
<u>Girard Home News</u> Thursday, March 26 – 13,500	<u>University City Review</u> Thursday, March 26 - 18,500
<u>Kensington/Richmond Guide</u> Thursday, March 26 - 30,000	Westside Weekly Thursday, March 26 – 15,000
<u>Juniata News</u> Tuesday, March 24 - 10,000	
JAP/rp	
DISTRIBUTION	
LRI Committee:	
Drew Brown Terry Iacobucci Barbara Kennedy Gerson Korntreger	
Matt Smith Robin Zerbib	
cc: Joan Becker Geoff Tom Kulesza Joanr	Frey Brock ne Dahme
82-S-1 (Rev. 3/59) RESPONSE TO THIS MEMORANDU	M MAY BE MADE HEREON IN LONGHAND

and the second second

> See Distribution Response Attachment PA-I-13.A

ROM : Joan Anne Przybylowicz, Administrative Technician, Public Relations

IBJECT: Water/Sewer Bill Message

Water Revenue has agreed to run the following message <u>beginning immediately and</u> lasting until April 15. It will reach 190,000 customers.

Volunteer for FREE water testing to measure lead and copper levels in your drinking water. Was your home built before 1950? Does your home have a service line made of lead? Was your kitchen/bathroom WATER SUPPLY plumbing repaired between January 1983 and January 1986? If yes, volunteer by calling the Philadelphia Water Department 592-6300.

Joan Anne Przybylówicz

Admin. Tech. Public Relations

JAP/sm

Distribution:

- LRI Committee: Drew Brown Terry Iacobucci Barbara Kennedy Gerson Korntreger Howard Neukrug Matt Smith Robin Zerbib
- cc: Joan Becker Tom Kulesza Geoffrey Brock 1MEM.JOAN

12-5-1 (Rev. 3/59)

RESPONSE TO THIS MEMORANDUM MAY BE MADE HEREON-IN LONGHAND

Response Attachment PA-I-13.A



February 2021

MAR 2 2 1995

Southeast Region

### CITY OF PHILADELPHIA

KUMAR KISHINCHAND, P.E. COMMISSIONER WATER DEPARTMENT BUREAU OF LABORATORY SERVICES 1500 E. Hunting Park Avenue Philadelphia, PA 19124-4941

March 21, 1995

Mr. Mark L. Johnson PADER - Water Supply & Community Health 555 North Lane - Ste 6010 Conshohocken PA 19428

#### RE: DER's New Regulations on Lead and Copper

Dear Mark:

As per our recent phone conversation regarding the PADER's new regulations on lead and copper (LCR), I am submitting this report for your review and response. The Philadelphia Water Department (PWD) appreciates and welcomes this opportunity to present our previous experience on LCR work and raise up related questions for your clarification.

As you are aware, although PWD exceeded the 15 ppb lead action level (AL) in the first round of monitoring, our second round of six-month monitoring, performed during 1992 under the EPA's LCR, met the AL. PWD provided a six-month lead education program for the public and continued its public education efforts throughout 1993 despite the satisfactory results from the second round of monitoring. In addition, PWD has since modified its corrosion control program through increased dosages of inhibitor (zinc orthoposphate) in order to minimize lead leaching in the customers' plumbings.

While PWD found its 1992 LCR compliance work to be a very extensive task requiring a great deal of manpower and cost, our experience tells us that lead in a customer's tap cannot be measured accurately by random testing and such results do not represent the plumbing conditions. For instance, we often found that resampling of the same tap under a controlled protocol produced very different results. It was amazing to find that each of over 100 homes we monitored had its own plumbing characteristics and configuration that was quite different from each other. EPA (Mr. George Rizzo) recognized the variables in Mr. Mark L. Johnson March 21, 1995 page two

lead sampling and allowed us to use our best judgement in sampling so that we could produce the most representative results when we encountered unusual situations.

It is interesting to note that the median lead level in most-at risk homes from the 1992 monitoring was 6 ppb. So far, we have not identified any case where water was the source of elevated lead in blood samples. Since the 1991 LCR promulgation, PWD and the Health Department have investigated a number of cases concerning lead in blood, requested by the Health Department or physicians, and found no single case related to the consumption of water.

Although we have gained valuable experience on lead issues, it requires considerable planning and resources in order to comply with the DER's LCR, especially at a time when the ICR, D/DBP, ESWTR and SOC regulations are upon us. As you have helped us in the past, we look forward to working very closely with you on the LCR compliance work.

Below is a listing of questions and comments for your review and direction:

 Would DER provide utilities with a monitoring guidance manual as EPA did in 1991?

If not, then PWD will continue to use the approved EPA manual.

- PWD understands that the two six-month samplings performed in 1992 will be counted towards the three consecutive years to apply for reduced triennial monitoring - such reduced monitoring can start in 1998, if granted (i.e., a 50 home sampling during July-December 1998 for PWD).
- 3. The LCR states that the first draw sample should be taken after at least a 6-hour standing time. What is the maxi mum standing time.

PWD understands that samples should not be taken after an extended time period of standing. PWD understands that the industry continues to use the general rule of thumb which EPA agreed to - 6 to 12 hour standing time.

 The LCR states that when a sampling point is no longer collectable it must be replaced with another sampling point "nearby". Mr. Mark L. Johnson March 21, 1995 page three

> PWD will try to locate and sample from the most representative substitute home (re: Total Coliform Rule's sampling requirement) which requires flexibility in defining "nearby".

- 5. PWD again will have to ask PWD-trained volunteers (high risk homes) to collect samples. How would you like us to proceed if we find problems or errors in sampling done by the customer due to unexpected events (i.e. leaks in pipes, toilet flushing): shall we consult with DER for direction in each case or attempt to collect representative samples and document?
- 6. PWD will be participating in an AWWA Research Foundation project to look at the impact of corrosion control. As you know, we are in the process of providing consistent treatments (pH and orthophosphate) at each plant. PWD will be collecting special lead and copper samples from homes before, at start-up, and the completion of treatment changes. Rather than submit these research results under the DER'S LCR (as the Regulations may imply is required), we plan to submit the findings in their completeness along with our interpretation once all samples have been collected (perhaps 1-2 years from now). The first set of 15 samples will be collected over the three months. Unless you see a reason to do otherwise, we will proceed in this manner.

If you have questions please call me at (215) 685-1407.

Very truly yours,

Jung Choi

Bureau of Lab Services PWD

cc: G. Brock

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### Memorandum

то :	Geoffrey L. Brock, Director, BLS	
FROM :	Jung Choi, Scientific & Regulatory Affairs, BLS	
SUBJECT:	MFETTING WITH DEP ON SDWA REGULATIONS	

On 6/28/95 the Philadelphia Water Department Personnel met with Mark Johnson from the Pennsylvania DEP to discuss issues regarding the Safe Drinking Water Act regulations and monitoring the Before the meeting, BLS submitted listings of questions and  $\operatorname{com}_{(A} \cap^{\mathbb{N}^{L}}$  ments on Pb/Cu, TTHMs, total coliforms and disinfectant residuals pool (chlorine) to Mr. Johnson for his review and direction.

At the meeting Mr. Johnson explained the PA Department of Environmental Protection's (DEP) position in the enforcement of the State's SDWA regulations and clarified all the questions and issues that we had raised as shown below (as of 7/1/95, PADER is now PADEP). He explained that DEP's position is to help utilities, especially small systems, to comply with the regulations rather than to act under enforcement. He further stated that DEP has long recognized PWD as a reliable, confident system that has put considerable efforts into water quality monitoring and quality assurance. Consequently, DEP will allow PWD to use its best judgement in monitoring under the SDWA regulations, especially with Pb/Cu sampling. PWD updated him with respect to the Lead and Copper Rule, that since 1992 PWD has provided public education programs and enhanced its corrosion control program to minimize lead leaching in the customers' plumbing.

- I. DEP's New Regulations on Lead & Copper
  - 1. Q. Would DEP provide utilities with a monitoring guidance manual as EPA did in 1991?
    - A. Yes, Mr Johnson provided PWD with a guidance manual that was issued on 3/7/95. This has been distributed to interest units.
  - 2. Q. PWD understands that the two six-month samplings performed in 1992 will be counted towards the three consecutive years to apply for reduced triennial monitoring - such reduced monitoring can start in 1998, if granted (i.e., a 50 home sampling during July-December 1998 for PWD).
    - A. Yes.

Response Attachment PA-L13 A

## USEPA's Minor Revisions to Lead and Copper Rule

### December 1999

Compiled by SRA, BLS

The LCRMR ( Lead and Copper Rule Minor Revisions ) have made the following changes that pertain to PWD's program:

 The sampling period for lead and copper, at the tap, will be June-September ( 4 months ) however, the State can designate another 4 month period.

The definition of insignificant levels of lead and copper are....lead equal to or below the PQL of 0.005 mg/L....and copper equal to or below 1/2 the action limit which is 0.65 mg/L.

"Any water system deemed to have optimized corrosion control....shall notify the State in writing [ no later than 60 days after making the change ].....of any change in treatment or the addition of a new source. The State may require any such system to conduct additional monitoring or to take other action the State deems appropriate to ensure that such systems maintain minimal levels of corrosion in the distribution system."

- In ongoing sampling at the tap for lead and copper, if PWD cannot maintain enough tier 1,2,3 sites then **PWD can use alternative representative taps in distribution**. The EPA *encourages* that these taps be new copper plumbing ( installed after 1988-89 lead ban ) so that more data will be gathered on new copper corrosion. No justification letter is needed for the State.
- In testing; "After acidification to resolubilize the metals, the sample must stand in the original container for the time specified in the approved EPA method before the sample can be analyzed."

Reduced water quality monitoring must be representative of standard monitoring sites in the distribution system. These are for pH, alkalinity and orthophosphate every 6 months ( unless the State notifies that reduced monitoring can begin ). The plant effluents must be monitored at least every

two weeks for pH, phosphate dosage and phosphate residual.

A WQ violation is defined as **WQ parameter out of range for a total of more than 9 days in six months**( 9 excursions in six months ). These **excursions** are based on either: most recent test result if done < 1/day; the day's result if done 1/day; an average of the day's results if done >1/day. Out of compliance will result in full WQ monitoring and two consecutive six-month lead/copper sampling runs.

### Pennsylvania Department of Environmental Protection and Philadelphia Water Department Annual Meeting

March 15, 2000 DEP Conshohocken offices

### <u>AGENDA</u>

### <u>PaDEP</u>

inse Attachment

- Update on IESWTR and D/DBP Rule

- Update on SWAP

- Tour of Mobile Analytical Unit

#### PWD

- Request for update on the benchmarking submission of last fall

- LCR Minor Revisions and Future AWWARF Project BLS' Summary of ICR Results

- PWD's Distribution Water Quality and Reservoir Updates

- PWD/PaDEP Intern Program

- Water Treatment Update and Operating Permit Amendment Requests

Response Attachment PA-I-13 DER-RECEIVED



### NOV 18 1992 COMMONWEALTH OF PENNSYLVANIA

## DEPARTMENT OF ENVIRONMENTAL RESOURCES

Bureau of Water Supply and Community Health Post Office Box 8467 Harrisburg, Pennsylvania 17105 November 16, 1992

1510001

PWSID:

717/787-0122

February 202

Mr. William Wankoff Philadelphia Water Department 1101 Market Street Philadelphia, PA 19107

Dear Mr. Wankoff:

Monitoring results for the initial period beginning January 1, 1992, indicate that your system exceeds the action level for lead. As a result of this exceedance, you must do the following:

- Monitor source water for lead at all entry points to your distribution system in accordance with 40 CFR 141.88 (a) (1), and report the results in any format to: EPA, Region III, Drinking Water/Ground Water Protection Branch, 841 Chestnut Building, Philadelphia, PA 19107 according to 40 CFR 141.90 (b) within six months of the date of the exceedance of the lead action level. Include these results in your feasibility study and submit it to DER by June 30, 1994.
- 2. Deliver a public education program as described in 40 CFR 141.85 by December 7, 1992.
- 3. Submit a letter to your local DER District office and EPA by December 31, 1992 demonstrating that your system has delivered the public education materials that meet the regulation's content and delivery requirements. This letter must include a list of all newspapers, radio and television stations, facilities and organizations to which you have delivered public education materials during the year.

If you complete the second monitoring period for lead and copper and do not exceed the lead action level and report the results to DER and EPA by December 7, 1992, you are not required to meet the public education requirement during this monitoring period. Enclosed for your reference is a double-sided sheet summarizing community water system public education requirements taken from EPA's Public Education Guidance (EPA 812/B-92 002).

If you have any questions, please contact your local DER office.

Sincerely,

197 Frederick A. Marrocco, Chief

Division of Drinking Water Management

February 2021

Enclosure

cc: DER District Office

## Lead/Copper Sampling Program Summary

System Name : Philadelphia Water Department Type: CWS Address : c/o Bureau of Laboratory Services Size: >100,000 1500 E. Hunting Park Ave. Philadelphia, PA 19124-4941

Telephone Number: 215-685-1408 System ID #: 1510001 Contact Person: Terry Iacobucci

#### Summary of Lead Copper Sampling

Number of Samples Required : 160 Number of Samples Submitted: 162

#### Targeting Criteria

Number of single-family structures(SFR) with copper pipes with 162 lead solder installed after 1982 or lead pipes and/or lead service lines (Tier 1)

Number of SFR with copper pipes with lead solder (SFR>82) 81 Number of SFR with lead service lines (SFR LSL) 81

#### 

#### <u>Certification of Collection Methods</u>

I certify that:

Each first draw tap sample for lead and copper is one liter in volume and has stood motionless in the plumbing system of each sampling site for at least six hours. Each first draw sample collected from a single-family

residence has been collected from the cold water kitchen tap or bathroom sink tap.

Each resident who volunteered to collect tap water samples from his or her home has been properly instructed by Philadelphia Water Department Bureau of Laboratory Services in the proper methods for collecting lead and copper samples. I do not challenge the accuracy of those sampling results. Enclosed is a copy of the material distributed to residents explaining the proper collection methods.

Signature: Geoffrey L. Brock Dir 92

Name

ector,	Bureau	of	Lab	Services	7/8/9
	Titl	е			Date

PAGE 1

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PHILADELPHIA WATER DEPARTMENT BUREAU OF LABORATORY SERVICES SUMMARY OF P5/Cu RESULTS

PWS ID#:	1510001			
SAMPLING	PERIOD:	01/01/92	5	06/30/92

	LOCATION	CRITERIA	SAMPLE	ANALYTICAL	RESULTS
	ID		DATE	РЬ (ррЬ)	Cu (ppm)
	40	SFR>82	01/31/92	6.0	.081
	231	SFR LSL	02/01/92	6.0	.146
	349	SFR LSL	02/02/92	12.0	.126
	339	SFR>82	01/09/92	1.0	.151
	296	SFR>82	01/09/92	2.0	.192
		SFR>82	01/13/92	5.0	.144
	310	SFR>82	81/12/92	21.0	.199
	147	SFR\82	D1/14/92	4.0	.113
	314	SFR>82	01/14/92	130.0	. 086
	7 2 <del>4</del> 7 2 4	SEB>92	01/15/92	200,0 4 0	,999 NBN
	123		01/1///2 01/14/00	4 ñ	.000 204
			01/10//2 01/15/00	3.0 3.0	197
	270	0117702 CED\07		ZO 0	- 127 ARA
	11 072		01/10/72	72.0 R 0	, UZU 073
	224	3FR/02 5FD\00	01/20/72		. U/ / 1 A G
	274	3FR/82 SED:00	01/21/72 01/01/00		, 107 110
	74			4.0	· 1 17
	5/5	SFK LSL	01/21/72	T U U . U	, UCO 0/7
	111	5FR282	01/22/72	2.0	.062
	154	SFR>82	01/22/92	2.0	.062
,	54	SFR>82	01/22/92	65.U	.0/6
	104	SFR>82	01/23/92	6.U	.092
	<i></i>	SFR LSL	01/23/92	4.0	.098
	62	SFR LSL	01/24/92	5.0	. 029
	369	SFR LSL	01/27/92	3.0	.087
	71	SFR LSL	01/31/92	6.0	.086
	319	SFR LSL	01/28/92	5.0	.080
	271	SFR>82	01/28/92	2.0	.098
	120	SFR LSL	01/28/92	5.0	.074
	329	SFR>82	01/28/92	З.О	.121
	95	SFR>82	01/28/92	13.0	.104
	22	SFR LSL	02/12/92	11.0	.453
	82	SFR>82	02/11/92	3.0	.110
	64	SFR LSL	01/30/92	5.0	.138
	313	SFR>82	02/05/92	1.0	.023
	295	SFR>82	02/03/92	6.0	.119
5,	309	SFR>82	02/04/92	2.0	.056
v.	115	SFR>82	02/14/92	14.0	.129
	177	SFR>82	02/12/92	3.8	.063
	366	SFR LSL	02/17/92	8.0	.181
	229	SFR>82	82/18/92	4.0	. 471
	14	SFR LSL	02/18/92	46.0	.905
	286	SFR>82	02/19/92	4.0	1.136
	279	SFR>82	82/19/92	6.0	1.757
	284	SFR>82	02/19/92	3.0	1.033
	326	SFR>82	02/19/92	116.0	. 191
	943	SFR>82	02/20/92	4_ N	. 497
	214		07/19/92	11.0	485
	2 - L U E	SER ISI	07/91/99	, o - A - A	573
		SFB>27	02/21/92 02/91/99	4 Ñ	 495
	107 170		02721772 ND 703700	U - U K N	1 /10
	470	0FR/04	96122172	ン・リ	1.417

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PHILADELPHIA WATER DEPARTMENT BUREAU OF LABORATORY SERVICES SUMMARY OF Pb/Cu RESULTS

PWS ID‡:	1510001			
SAMPLING	PERIOD:	01/01/92	-	96738792

LOCATION	CRITERIA	SAMPLE	ANALYTICAL	RESULTS
1 [.)		UMIE	נפקקי סק	Cu (ppm)
67	SFR LSL	82/23/92	÷.0	. 447
367	SFR>82	82/24/92	5.0	.769
273	SFR>82	82/24/92	12.0	1.556
285	SFR>82	82/24/92	2.0	1,450
283	SFR>82	82/24/92	3.0	1.792
311	SFR>82	02/25/92	4.0	.135
391	SFR LSL	02/25/92	11.0	. 489
289	SFR>82	02/24/92	4.0	1.265
96	SFR LSL	02/26/92	8.0	.527
146	SFR>82	02/27/92	1.0	1.566
25	SFR LSL	83/82/92	11.0	. 422
310	SFR>82	03/01/92	ラ.0	1.514
291	SFR>82	83/84/92	7.0	.730
282	SFR>82	03/06/92	<del>5</del> .0	1.230
428	SFR LSL	03/06/92	12.0	. 49 8
426	SFR LSL	83/10/92	111.0	.130
69	SFR LSL	03/11/92	5.0	.150
222	SFR LSL	03/11/92	10.0	.410
87	SFR LSL	03/11/92	16.0	,120
26	SFR LSL	03/11/92	8.0	.100
240	SFR LSL	03/11/92 -	7.0	.180
327	SFR>82	03/07/92	4.0	1.300
354	SFR>82	03/16/92	5.0	.250
431	SFR LSL	03/16/92	2.0	.880
53	SFR>82	03/16/92	3.0	.200
80	SFR LSL	03/16/92	35.0	.190
288	SFR>82	03/11/92	1.0	.940
178	SFR LSL	03/17/92	35.8	.210
364	SFR>82	03/14/92	2.0	.080
65	SFR LSL	03/19/92	148.0	.110
202	SFR LSL	03/20/92	20.0	.060
227	SFR LSL	03/19/92	7.0	.110
118	SFR LSL	03/23/92	8.0	.270
562 562	SFR LSL	03/19/92	7.0	.020
261	SFR LSL	83/26/92	8.0	.349
42 5.5	SFR>82	03/16/92	4.0	.290
217	SFR>82	03/27/92	4.0	. 464
2/6	SFR LSL	03/27/92	17.0	.186
59U 007	SFR/82	04/22/92	18.8	.351
202	SFR>82	04/22/92	8.0	.310
228	BFR LBL	04/03/92	4,8	.128
27 500	SFR>92	04/08/92	2.0	.228
967 71	SFK282 SFD2 88	04/0//92	9.8	.151
19 1. 19 1. 19	SFR282	04/09/92	2.U	.693
141 427	3FR282 off i o	94/96/92	2.0	.167
488 107	STK LSL Sts ( S)	04/22/92	12.0	. 468
lo/ c/	SFR LOL	U4/Z5/92	22.0	.332
50 100	SFR LSL	04/03/72	4.0	.115
100 100	SFR LOL	04/28/92	ó.8 — -	. 871
276	or Ry dZ	04/01/92	م <sup>ر</sup> . U	.125

PAGE 2

PHILADELPHIA WATER DEPARTMENT BUREAU OF LABORATORY SERVICES SUMMARY OF P5/Cu RESULTS

PWS ID‡:	1510001
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SAMPLING PERIOD: 01/01/92 - 06/30/92

LOCATION	CRITERIA	SAMPLE	AMALYTICAL	RESULTS
ID		DATE	РЬ (ррЬ)	Cu (ppm)
18	SFR LSL	04/02/92	4.0	.092
592	SER>82	04/03/92		. 126
306	SFR>82	04/02/92	16.0	.236
45	SFR LSL	03/31/92	3.0	.602
443	SFR LSL	03/31/92	<b>6.</b> 0	.122
259	SFR>82	03/30/92	3.0	,102
477	SFR LSL	04/01/92	51.0	.275
21	SFR>82	04/30/92	7.0	.395
472	SFR>82	05/12/92	2.0	.090
158	SFR LSL	05/15/92	4.0	.068
79	SFR LSL	04/03/92	72.0	.119
433	SFR LSL	04/03/92	2.0	.109
422	SFR LSL	84/81/92	4.0	.074
215	SFR>82	04/15/92	11.0	.139
2	SFR>82	84/14/92	123.0	.119
153	SFR>82	04/07/92	3.0	.510
379	SFR LSL	04/13/92	13.0	.067
609	SFR LSL	05/12/92	27.0	.408
439	SFR LSL	04/23/92	20.0	.377
629	SFR LSL	04/24/92	21.0	.071
473	SFR LSL	04/27/92	6.0	.095
452	SFR LSL	04/27/92	14.0	.194
419	SFR LSL	04/22/92	5.0	.179
447	SFR LSL	05/01/92	10.0	.272
587	SFR>82	05/04/92	8.0	.432
49	SFR LSL	05/18/92	두.0	.562
238	SFR LSL	05/18/92	6.0	.670
453	SFR LSL	05/15/92	5.0	.356
469	SFR>82	05/20/92	4.0	.840
143	SFR>82	05/20/92	4.0	.079
608	SFR>82	05/22/92	205.0	1.103
640	SFR LSL	05/22/92	2.0	,037
337	SFR>82	85/22/92	4.8	1.261
437	SFR LSL	05/19/92	31.0	.400
432	SFR LSL	05/26/92	é.Q	.417
642	SFR LSL	05/26/92	10.0	.373
353	SFR LSL	05/28/92	4.8	.105
635	SFR>82	05/29/92	12.0	.222
434	SFR LSL	06/01/92	5.0	.084
641	SFR LSL	05/27/92	9.0	.309
293	SFR>82	05/27/92	10.0	.091
451	SFR>82	06/03/92	é.0	.060
631	SFR LSL	06/11/92	9.0	.668
558	SFR LSL	06/09/92	6.0	.081
361	SFR>82	06/05/92	5.0	.066
467	SFR>82	06/05/92	14.0	.108
607	SFR LSL	06/08/92	6,0	.031
209	SFR>82	06/04/92	12.0	.560
606	SFR LSL	06/04/92	5.0	.037
522	SFR LSL	06/09/92	2.0	1.162

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PHILADELPHIA WATER DEPARTMENT BUREAU OF LABORATORY SERVICES SUMMARY OF Pb/Cu RESULTS

PWS JD‡:	1510001			
SAMPLING	PERIOD:	01/01/92 -	- 86/30/9	2

438       SFR LSL       06/05/92       15.0       .491         487       SFR LSL       06/10/92       4.0       .109         385       SFR LSL       06/11/92       8.0       .069         4       SFR LSL       06/11/92       7.0       .201         323       SFR LSL       06/11/92       6.0       .192         442       SFR LSL       06/11/92       2.0       .394         59       SFR>82       06/11/92       3.0       .434         440       SFR LSL       06/09/92       13.0       .185         213       SFR LSL       06/11/92       1.0       1.247	LOCATION ID	CRITERIA	SAMPLE DATE	ANALYTICAL Pb (ppb)	RESULTS Cu (ppm)
385         SFR LSL         06/11/92         8.0         .065           4         SFR LSL         06/11/92         7.0         .201           323         SFR LSL         06/11/92         7.0         .201           323         SFR LSL         06/11/92         6.0         .192           442         SFR LSL         06/11/92         2.0         .394           59         SFR>82         06/11/92         3.0         .434           440         SFR LSL         06/09/92         13.0         .185           213         SFR LSL         06/11/92         1.0         1.247	438 487	SFR LSL SFR I SI	06/05/92 06/10/92	15.0 7 0	.491
4         5FR LSL         06/10/92         7.0         .201           323         SFR LSL         06/11/92         6.0         .192           442         SFR LSL         06/11/92         2.0         .394           59         SFR LSL         06/11/92         3.0         .434           440         SFR LSL         06/09/92         13.0         .185           213         SFR LSL         06/11/92         1.0         1.247	385	SFR LSL	06/11/92	8.0	. 365
442         SFR LSL         06/11/92         2.0         .392           59         SFR>82         06/11/92         3.0         .434           440         SFR LSL         06/09/92         13.0         .185           213         SFR LSL         06/11/92         1.0         1.247	323	SFR LSL SFR LSL	06/10/92 06/11/92	7.0 6.0	.201 .192
440         SFR LSL         06/11/92         13.0         .185           213         SFR LSL         06/11/92         1.0         1.247	442 59	SFR LSL SFR>82	06/11/92 04/11/92	2.0	.394
213 SFR LSL 06/11/92 1.0 1.247	440	SFR LSL	06/09/92	13.0	.494 .185
194 SFR>82 06/11/92 1.0 .054	213 194	SFR LSL SFR>82	06/11/92 06/11/92	1.0 1.0	1.247 .054
605 SFR>82 06/05/92 7.0 .093 659 SFR LSL 06/12/92 4.0 .394	605 659	SFR>82 SFR LSL	06/05/92 06/12/92	7.0 4.0	.093 .394

PAGE 4

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Response Attachment PA-I-13.A

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### CITY OF PHILADELPHIA

KUMAR KISHINCHAND, P.E. COMMISSIONER WATER DEPARTMENT BUREAU OF LABORATORY SERVICES 1500 E. Hunting Park Avenue Philadelphia, PA 19124-4941 January 7, 1992

George Rizzo 3WM41 Environmental Scientist US EPA Region III 841 Chestnut Street Philadelphia, PA 19107

JAN 1 1995 DW/GW Fratectina Branch - 3WM49

Dear Mr. Rizzo:

Attached please find the Philadelphia Water Department's Phase 2 monitoring results to be used to comply with the Federal S.D.W.A. Lead/Copper Regulations.

- The attached summaries include:
- a summary of the Lead/Copper Sampling Program, including a certification of the collection methods,
- 2). an addendum to the Lead/Copper Sampling Results,
- 3). an addendum to the Targeting Criteria
- 4). a ranking of the lead results with the computation of the 90th percentile,
- 5). a ranking of the copper results with the computation of the 90th percentile,
- 6). a summary of the water quality sampling program where samples were collected from routine sample points in the distribution system,
- a summary of the water quality results from those distribution points,
- 8). a summary of the lead and copper analytical results for the source water or entry point,
- 9). a summary of the water quality results for the source water or entry point, and.
- 10). a copy of the PA DER S.D.W.A-PbCu form sent to the PA DER.

Sincerely,

Geoffre∳ L. Brock Director Bureau of Laboratory Services

attach GLB/GMK

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Debra A. McCarty, Water Commissioner

### **Memorandum**

Date: 3/23/16

From: Rita Kopansky, Scientific and Regulatory Affairs Manager, PW

To: Gary Burlingame, Director of Laboratories, PW

Subject: 2014 LCR outreach efforts summary

This memo summarizes the outreach efforts conducted in preparation to 2014 Lead and Copper Rule (LCR) triennial sampling. Number of homes originally recruited in 1992 for the LCR sampling pool continued to decline after 10 rounds of sampling. In an attempt to increase participation from homes with lead service lines, an extensive evaluation of the Philadelphia housing records was conducted. Some of the information in this memo was included in the Sampling Siting Plan (SSP) provided to PA DEP as part of 2014 LCR documentation.

#### **Outreach activities**

The goal of the outreach was to add at least 50-100 homes with lead service lines to the sampling program. It was determined that about 8,000 customers would need to be contacted to arrive at 50-100 lead service lines. This number, 8,000 customers, was based on the expected return of the outreach effort from previous outreach attempts which yielded about 2% of responses

Homes built prior to 1950 attached to mains laid before 1950 were targeted for the outreach program. Publicly available real-estate databases and internal records of distribution main ages were used for this evaluation. Approximately 100,000 addresses of single family residences were found to fit these criteria after completing the evaluation.

Using a database with 100,000 addresses, a number of addresses were identified in each pressure district of the Philadelphia water distribution system to come up with approximately 8,000 addresses for the outreach. Number of addresses in each pressure district was chosen proportional to the size of each pressure district and geographic distribution of clusters of older homes. Once the desired number of addressed was determined in each pressure district, addresses were randomly selected in each pressure district for the mailing of outreach letters. Overall, 7, 914 addresses were selected for the outreach.

Table 1. below shows a breakdown of number of customers contacted in each pressure district.

PWD Pressure Districts	# of Houses Selected for LCR recruitment in 2014
1	974
2	737
3	156
4	177
5	48
6	401
7	2491
8	67
9	1013
10	1635
11	66
12	149
SUM:	7914

Table 1. PDW LCR 2014 outreach in older hon	ies
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The outreach to 7914 customers resulted in the return of 193 valid applications, or a 2.4% return. 54 out of 193 customers provided samples for the LCR Program.

In addition to the larger outreach to 7914 customers, PWD contacted 426 customers who previously participated in the program from 1992 through 2011. 112 applications were returned as a result of this effort.

A department-wide e-mail outreach was directed to hundreds of PWD employees in the attempt to reach more customers. 26 applications were returned as a result of this effort. 3 applications were received as a result of referrals.

#### Summary of the outreach activities

Through multiple outreach efforts, a total of 334 customers applied to participate in the program.

Table 2. summarizes results of the outreach efforts during 2014 LCR recruitment.

#### Table 2. Results of the PWD LCR 2014 outreach and recruitment efforts

Philadelphia Water | 1101 Market Street | Philadelphia, PA 19107-2994 An Equal Opportunity Employer

<b>Total Participants Contacted</b>	8,340
Previous Participants Contacted	426
Outreach Participants Contacted	7914
Total Applicants for 2014	334
Previous Participants	112
Potential LSL Outreach Applicants	193
New PWD/Other Applicants	29

#### Summary of sampling conducted for 2014 LCR

All new applicants were evaluated for compliance with LCR sampling criteria for Tier 1 and Tier 3 high risk homes. As a result of the plumbing inspections and information gathered from customers, 192 homes were identified for the sampling pool.

Table 3. below lists statistics for participating customers during 2014 LCR sampling.

#### Table 3. PWD LCR 2014 sampling program participants.

Samples Kits Deliverd	192	100%
Returned	134	70%
Not Returned	58	30%

Total Participants	134	100%
# with Lead Service Lines	34	25%
# with Lead Solder	100	75%

Total Participants	134	100%
# of previous participants	66	49%
# of new participants	68	51%

#### 25 Pa. Code Section 109.1103(g):

Sample site location plan. The water supplier shall complete a sample site location plan which includes a materials evaluation of the distribution system, lead and copper tap sample site locations, water quality parameter sample site locations, and certification that proper sampling procedures are used. The water supplier shall complete the steps in paragraphs (1)—(3) by the applicable date for commencement of lead and copper tap monitoring under subsection (a)(1) and the step in paragraph (4) following completion of the monitoring. The water supplier shall keep the sample site location plan on record and submit the plan to the Department in accordance with § 109.1107(a)(1).

(1) Materials evaluation. A system shall review the following sources of information in order to identify a <u>sufficient</u> number of lead and copper tap sampling sites.

(i) Plumbing codes, permits and records in the files of the building departments of each municipality served by the system which indicate the plumbing materials that are installed within structures connected to the distribution system.

(ii) Inspections and records of the distribution system that indicate the material composition of the service connections that connect a structure to the distribution system.

(iii) Existing water quality information, which includes the results of prior analyses of the system or individual structures connected to the system, indicating locations that may be particularly susceptible to high lead or copper concentrations.

(2) Lead and copper tap sample site selection. Lead and copper tap sampling sites are classified as tier 1, tier 2 or tier 3. Tier 1 sites are the highest priority sample sites.

(i) Site selection for community water systems. The water supplier shall select all tier 1 sample site locations, if possible. A community water system with an insufficient number of tier 1 sampling sites shall complete its sampling pool with tier 2 sites. Tier 3 sites shall be used to complete the sampling pool if the number of tier 1 and tier 2 sites is insufficient. If the system has an insufficient number of tier 1, tier 2 and tier 3 sites, the water supplier shall sample from other representative sites throughout the distribution system in which the plumbing materials used at the site would be commonly found at other sites served by the system.

(A) Tier 1 sampling sites shall consist of single family structures that have one or more of the following:

(I) Copper pipes with lead solder installed after 1982.

(II) Lead pipes.

(III) Lead service line.

#### 25 Pa. Code Section 109.1107(a)(7):

(7) Record maintenance. The water supplier shall retain on the premises of the system or at a convenient location near the premises the following:

(i) Records of all monitoring results, which shall be kept for at least 12 years.

(ii) A copy of a current sample site location plan, which shall be kept for the life of the facility.

On

System size	1st monitoring period begins
Large	January 1, 1992
Medium	July 1, 1992
Small	July 1, 1993
Initial monitoring:	
System size	
(# of people served)	# of Sample Sites
>100,000	100
10,001 to 100,000	60
3,301 to 10,000	40
501 to 3,300	20
101 to 500	10
100 or fewer 5	

#### **Environmental Protection Agency**

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Response Attachment PA-I-13.A

(e.g., the occupants of the residence where the tap was tested).

(2) *Timing of notification*. A water system must provide the consumer notice as soon as practical, but no later than 30 days after the system learns of the tap monitoring results.

(3) Content. The consumer notice must include the results of lead tap water monitoring for the tap that was tested, an explanation of the health effects of lead, list steps consumers can take to reduce exposure to lead in drinking water and contact information for the water utility. The notice must also provide the maximum contaminant level goal and the action level for lead and the definitions for these two terms from §141.153(c).

(4) Delivery. The consumer notice must be provided to persons served at the tap that was tested, either by mail or by another method approved by the State. For example, upon approval by the State, a non-transient non-community water system could post the results on a bulletin board in the facility to allow users to review the information. The system must provide the notice to customers at sample taps tested, including consumers who do not receive water bills.

[72 FR 57815, Oct. 10, 2007]

### §141.86 Monitoring requirements for lead and copper in tap water.

(a) Sample site location. (1) By the applicable date for commencement of monitoring under paragraph (d)(1) of this section, each water system shall complete a materials evaluation of its distribution system in order to identify a pool of targeted sampling sites that meets the requirements of this section, and which is sufficiently large to ensure that the water system can collect the number of lead and copper tap samples required in paragraph (c) of this section. All sites from which first draw samples are collected shall be selected from this pool of targeted sampling sites. Sampling sites may not include faucets that have point-of-use or pointof-entry treatment devices designed to remove inorganic contaminants.

(2) A water system shall use the information on lead, copper, and galvanized steel that it is required to collect under §141.42(d) of this part [special monitoring for corrosivity characteristics] when conducting a materials evaluation. When an evaluation of the information collected pursuant to §141.42(d) is insufficient to locate the requisite number of lead and copper sampling sites that meet the targeting criteria in paragraph (a) of this section, the water system shall review the sources of information listed below in order to identify a sufficient number of sampling sites. In addition, the system shall seek to collect such information where possible in the course of its normal operations (e.g., checking service line materials when reading water meters or performing maintenance activities):

(i) All plumbing codes, permits, and records in the files of the building department(s) which indicate the plumbing materials that are installed within publicly and privately owned structures connected to the distribution system;

(ii) All inspections and records of the distribution system that indicate the material composition of the service connections that connect a structure to the distribution system; and

(iii) All existing water quality information, which includes the results of all prior analyses of the system or individual structures connected to the system, indicating locations that may be particularly susceptible to high lead or copper concentrations.

(3) The sampling sites selected for a community water system's sampling pool ("tier l sampling sites") shall consist of single family structures that:

(i) Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or

(ii) Are served by a lead service line. When multiple-family residences comprise at least 20 percent of the structures served by a water system, the system may include these types of structures in its sampling pool.

(4) Any community water system with insufficient tier 1 sampling sites shall complete its sampling pool with "tier 2 sampling sites", consisting of buildings, including multiple-family residences that:

(i) Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or

56

§ 141.86

#### § 141.86

(ii) Are served by a lead service line. (5) Any community water system with insufficient tier 1 and tier 2 sampling sites shall complete its sampling pool with "tier 3 sampling sites", consisting of single family structures that contain copper pipes with lead solder installed before 1983. A community water system with insufficient tier 1, tier 2, and tier 3 sampling sites shall complete its sampling pool with representative sites throughout the distribution system. For the purpose of this paragraph, a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system.

(6) The sampling sites selected for a non-transient noncommunity water system ("tier 1 sampling sites") shall consist of buildings that:

(i) Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or

(ii) Are served by a lead service line. (7) A non-transient non-community water system with insufficient tier 1 sites that meet the targeting criteria in paragraph (a)(6) of this section shall complete its sampling pool with sampling sites that contain copper pipes with lead solder installed before 1983. If additional sites are needed to complete the sampling pool, the non-transient non-community water system shall use representative sites throughout the distribution system. For the purpose of this paragraph, a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system.

(8) Any water system whose distribution system contains lead service lines shall draw 50 percent of the samples it collects during each monitoring period from sites that contain lead pipes, or copper pipes with lead solder, and 50 percent of the samples from sites served by a lead service line. A water system that cannot identify a sufficient number of sampling sites served by a lead service line shall collect firstdraw samples from all of the sites identified as being served by such lines.

(b) Sample collection methods. (1) All tap samples for lead and copper collected in accordance with this subpart,

#### 40 CFR Ch. I (7–1–11 Edition)

with the exception of lead service line samples collected under §141.84(c) and samples collected under paragraph (b)(5) of this section, shall be first-draw samples.

(2) Each first-draw tap sample for lead and copper shall be one liter in volume and have stood motionless in the plumbing system of each sampling site for at least six hours. First-draw samples from residential housing shall be collected from the cold water kitchen tap or bathroom sink tap. Firstdraw samples from a nonresidential building shall be one liter in volume and shall be collected at an interior tap from which water is typically drawn for consumption. Non-first-draw samples collected in lieu of first-draw samples pursuant to paragraph (b)(5) of this section shall be one liter in volume and shall be collected at an interior tap from which water is typically drawn for consumption. First-draw samples may be collected by the system or the system may allow residents to collect first-draw samples after instructing the residents of the sampling procedures specified in this paragraph. To avoid problems of residents handling nitric acid, acidification of firstdraw samples may be done up to 14 days after the sample is collected. After acidification to resolubilize the metals, the sample must stand in the original container for the time specified in the approved EPA method before the sample can be analyzed. If a system allows residents to perform sampling, the system may not challenge, based on alleged errors in sample collection, the accuracy of sampling results.

(3) Each service line sample shall be one liter in volume and have stood motionless in the lead service line for at least six hours. Lead service line samples shall be collected in one of the following three ways:

(i) At the tap after flushing the volume of water between the tap and the lead service line. The volume of water shall be calculated based on the interior diameter and length of the pipe between the tap and the lead service line;

(ii) Tapping directly into the lead service line; or

#### **Environmental Protection Agency**

(iii) If the sampling site is a building constructed as a single-family residence, allowing the water to run until there is a significant change in temperature which would be indicative of water that has been standing in the lead service line.

(4) A water system shall collect each first draw tap sample from the same sampling site from which it collected a previous sample. If, for any reason, the water system cannot gain entry to a sampling site in order to collect a follow-up tap sample, the system may collect the follow-up tap sample from another sampling site in its sampling pool as long as the new site meets the same targeting criteria, and is within reasonable proximity of the original site.

(5) A non-transient non-community water system, or a community water system that meets the criteria of 141.85(b)(7), that does not have enough taps that can supply first-draw samples, as defined in §141.2, may apply to the State in writing to substitute nonfirst-draw samples. Such systems must collect as many first-draw samples from appropriate taps as possible and identify sampling times and locations that would likely result in the longest standing time for the remaining sites. The State has the discretion to waive the requirement for prior State approval of non-first-draw sample sites selected by the system, either through State regulation or written notification to the system.

(c) Number of samples. Water systems shall collect at least one sample during each monitoring period specified in paragraph (d) of this section from the number of sites listed in the first column ("standard monitoring") of the table in this paragraph. A system conducting reduced monitoring under paragraph (d)(4) of this section shall collect at least one sample from the number of sites specified in the second column ("reduced monitoring") of the table in this paragraph during each monitoring period specified in paragraph (d)(4) of this section. Such reduced monitoring sites shall be representative of the sites required for standard monitoring. A public water system that has fewer than five drinking water taps, that can be used for

human consumption meeting the sample site criteria of paragraph (a) of this section to reach the required number of sample sites listed in paragraph (c) of this section, must collect at least one sample from each tap and then must collect additional samples from those taps on different days during the monitoring period to meet the required number of sites. Alternatively the State may allow these public water systems to collect a number of samples less than the number of sites specified in paragraph (c) of this section, provided that 100 percent of all taps that can be used for human consumption are sampled. The State must approve this reduction of the minimum number of samples in writing based on a request from the system or onsite verification by the State. States may specify sampling locations when a system is conducting reduced monitoring. The table is as follows:

System size (number of people served)	Number of sites (stand- ard moni- toring)	Number of sites (reduced moni- toring)
>100,000	100 60 40 20 10 5	50 30 20 10 5 5

(d) *Timing of monitoring*—(1) *Initial tap sampling.* 

The first six-month monitoring period for small, medium-size and large systems shall begin on the following dates:

System size (No. people served)	First six-month moni- toring period begins on
>50,000	January 1, 1992.
3,301 to 50,000	July 1, 1992.
<3,300	July 1, 1993

(i) All large systems shall monitor during two consecutive six-month periods.

(ii) All small and medium-size systems shall monitor during each sixmonth monitoring period until:

(A) The system exceeds the lead or copper action level and is therefore required to implement the corrosion control treatment requirements under §141.81, in which case the system shall

#### § 141.86

#### § 141.86

continue monitoring in accordance with paragraph (d)(2) of this section, or

(B) The system meets the lead and copper action levels during two consecutive six-month monitoring periods, in which case the system may reduce monitoring in accordance with paragraph (d)(4) of this section.

(2) Monitoring after installation of corrosion control and source water treatment. (i) Any large system which installs optimal corrosion control treatment pursuant to \$141.81(d)(4) shall monitor during two consecutive sixmonth monitoring periods by the date specified in \$141.81(d)(5).

(ii) Any small or medium-size system which installs optimal corrosion control treatment pursuant to \$141.81(e)(5)shall monitor during two consecutive six-month monitoring periods by the date specified in \$141.81(e)(6).

(iii) Any system which installs source water treatment pursuant to §141.83(a)(3) shall monitor during two consecutive six-month monitoring periods by the date specified in §141.83(a)(4).

(3) Monitoring after State specifies water quality parameter values for optimal corrosion control. After the State specifies the values for water quality control parameters under §141.82(f), the system shall monitor during each subsequent six-month monitoring period, with the first monitoring period to begin on the date the State specifies the optimal values under §141.82(f).

(4) Reduced monitoring. (i) A small or medium-size water system that meets the lead and copper action levels during each of two consecutive six-month monitoring periods may reduce the number of samples in accordance with paragraph (c) of this section, and reduce the frequency of sampling to once per year. A small or medium water system collecting fewer than five samples as specified in paragraph (c) of this section, that meets the lead and copper action levels during each of two consecutive six-month monitoring periods may reduce the frequency of sampling to once per year. In no case can the system reduce the number of samples required below the minimum of one sample per available tap. This sampling shall begin during the calendar year immediately following the end of 40 CFR Ch. I (7–1–11 Edition)

the second consecutive six-month monitoring period.

(ii) Any water system that meets the lead action level and maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the State under §141.82(f) during each of two consecutive six-month monitoring periods may reduce the frequency of monitoring to once per year and reduce the number of lead and copper samples in accordance with paragraph (c) of this section if it receives written approval from the State. This sampling shall begin during the calendar year immediately following the end of the second consecutive sixmonth monitoring period. The State shall review monitoring, treatment, and other relevant information submitted by the water system in accordance with §141.90, and shall notify the system in writing when it determines the system is eligible to commence reduced monitoring pursuant to this paragraph. The State shall review, and where appropriate, revise its determination when the system submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap sampling becomes available.

(iii) A small or medium-size water system that meets the lead and copper action levels during three consecutive years of monitoring may reduce the frequency of monitoring for lead and copper from annually to once every three years. Any water system that meets the lead action level and maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the State under §141.82(f) during three consecutive years of monitoring may reduce the frequency of monitoring from annually to once every three years if it receives written approval from the State. Samples collected once every three years shall be collected no later than every third calendar year. The State shall review monitoring, treatment, and other relevant information submitted by the water system in accordance with §141.90, and shall notify the system in writing when it determines the system is eligible to reduce the frequency of

#### Environmental Protection Agency

monitoring to once every three years. The State shall review, and where appropriate, revise its determination when the system submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap sampling becomes available.

(iv) A water system that reduces the number and frequency of sampling shall collect these samples from representative sites included in the pool of targeted sampling sites identified in paragraph (a) of this section. Systems sampling annually or less frequently shall conduct the lead and copper tap sampling during the months of June, July, August, or September unless the State has approved a different sampling period in accordance with paragraph (d)(4)(iv)(A) of this section.

(A) The State, at its discretion, may approve a different period for conducting the lead and copper tap sampling for systems collecting a reduced number of samples. Such a period shall be no longer than four consecutive months and must represent a time of normal operation where the highest levels of lead are most likely to occur. For a non-transient non-community water system that does not operate during the months of June through September, and for which the period of normal operation where the highest levels of lead are most likely to occur is not known, the State shall designate a period that represents a time of normal operation for the system. This sampling shall begin during the period approved or designated by the State in the calendar year immediately following the end of the second consecutive six-month monitoring period for systems initiating annual monitoring and during the three-year period following the end of the third consecutive calendar year of annual monitoring for systems initiating triennial monitoring.

(B) Systems monitoring annually, that have been collecting samples during the months of June through September and that receive State approval to alter their sample collection period under paragraph (d)(4)(iv)(A) of this section, must collect their next round of samples during a time period that ends no later than 21 months after the

previous round of sampling. Systems monitoring triennially that have been collecting samples during the months of June through September, and receive State approval to alter the sampling collection period as per paragraph (d)(4)(iv)(A) of this section, must collect their next round of samples during a time period that ends no later than 45 months after the previous round of sampling. Subsequent rounds of sampling must be collected annually or triennially, as required by this section. Small systems with waivers, granted pursuant to paragraph (g) of this section, that have been collecting samples during the months of June through September and receive State approval to alter their sample collecunder tion period paragraph (d)(4)(iv)(A) of this section must collect their next round of samples before the end of the 9-year period.

(v) Any water system that demonstrates for two consecutive 6-month monitoring periods that the tap water lead level computed under 141.80(c)(3)is less than or equal to 0.005 mg/L and the tap water copper level computed under 141.80(c)(3) is less than or equal to 0.65 mg/L may reduce the number of samples in accordance with paragraph (c) of this section and reduce the frequency of sampling to once every three calendar years.

(vi)(A) A small or medium-size water system subject to reduced monitoring that exceeds the lead or copper action level shall resume sampling in accordance with paragraph (d)(3) of this section and collect the number of samples specified for standard monitoring under paragraph (c) of this section. Such a system shall also conduct water quality parameter monitoring in accordance with §141.87(b), (c) or (d) (as appropriate) during the monitoring period in which it exceeded the action level. Any such system may resume annual monitoring for lead and copper at the tap at the reduced number of sites specified in paragraph (c) of this section after it has completed two subsequent consecutive six-month rounds of monitoring that meet the criteria of paragraph (d)(4)(i) of this section and/ or may resume triennial monitoring for lead and copper at the reduced number of sites after it demonstrates

#### §141.86

through subsequent rounds of monitoring that it meets the criteria of either paragraph (d)(4)(iii) or (d)(4)(v) of this section.

(B) Any water system subject to the reduced monitoring frequency that fails to meet the lead action level during any four-month monitoring period or that fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the State under §141.82(f) for more than nine days in any six-month period specified in §141.87(d) shall conduct tap water sampling for lead and copper at the frequency specified in paragraph (d)(3) of this section, collect the number of samples specified for standard monitoring under paragraph (c) of this section, and shall resume monitoring for water quality parameters within the distribution system in accordance with §141.87(d). This standard tap water sampling shall begin no later than the six-month period beginning January 1 of the calendar year following the lead action level exceedance or water quality parameter excursion. Such a system may resume reduced monitoring for lead and copper at the tap and for water quality parameters within the distribution system under the following conditions:

(1) The system may resume annual monitoring for lead and copper at the tap at the reduced number of sites specified in paragraph (c) of this section after it has completed two subsequent six-month rounds of monitoring that meet the criteria of paragraph (d)(4)(ii) of this section and the system has received written approval from the State that it is appropriate to resume reduced monitoring on an annual frequency. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period.

(2) The system may resume triennial monitoring for lead and copper at the tap at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either paragraph (d)(4)(ii) or (d)(4)(v) of this section and the system has received written approval from the State that it is appropriate to resume triennial monitoring.

#### 40 CFR Ch. I (7–1–11 Edition)

(3) The system may reduce the number of water quality parameter tap water samples required in accordance with \$141.87(e)(1) and the frequency with which it collects such samples in accordance with \$141.87(e)(2). Such a system may not resume triennial monitoring for water quality parameters at the tap until it demonstrates, in accordance with the requirements of \$141.87(e)(2), that it has re-qualified for triennial monitoring.

(vii) Any water system subject to a reduced monitoring frequency under paragraph (d)(4) of this section shall notify the State in writing in accordance with §141.90(a)(3) of any upcoming long-term change in treatment or addition of a new source as described in that section. The State must review and approve the addition of a new source or long-term change in water treatment before it is implemented by the water system. The State may require the system to resume sampling in accordance with paragraph (d)(3) of this section and collect the number of samples specified for standard monitoring under paragraph (c) of this section or take other appropriate steps such as increased water quality parameter monitoring or re-evaluation of its corrosion control treatment given the potentially different water quality considerations.

(e) Additional monitoring by systems. The results of any monitoring conducted in addition to the minimum requirements of this section shall be considered by the system and the State in making any determinations (*i.e.*, calculating the 90th percentile lead or copper level) under this subpart.

(f) Invalidation of lead or copper tap water samples. A sample invalidated under this paragraph does not count toward determining lead or copper 90th percentile levels under §141.80(c)(3) or toward meeting the minimum monitoring requirements of paragraph (c) of this section.

(1) The State may invalidate a lead or copper tap water sample at least if one of the following conditions is met.

(i) The laboratory establishes that improper sample analysis caused erroneous results.

(ii) The State determines that the sample was taken from a site that did

#### **Environmental Protection Agency**

not meet the site selection criteria of this section.

(iii) The sample container was damaged in transit.

(iv) There is substantial reason to believe that the sample was subject to tampering.

(2) The system must report the results of all samples to the State and all supporting documentation for samples the system believes should be invalidated.

(3) To invalidate a sample under paragraph (f)(1) of this section, the decision and the rationale for the decision must be documented in writing. States may not invalidate a sample solely on the grounds that a follow-up sample result is higher or lower than that of the original sample.

(4) The water system must collect replacement samples for any samples invalidated under this section if, after the invalidation of one or more samples, the system has too few samples to meet the minimum requirements of paragraph (c) of this section. Any such replacement samples must be taken as soon as possible, but no later than 20 days after the date the State invalidates the sample or by the end of the applicable monitoring period, whichever occurs later. Replacement samples taken after the end of the applicable monitoring period shall not also be used to meet the monitoring requirements of a subsequent monitoring period. The replacement samples shall be taken at the same locations as the invalidated samples or, if that is not possible, at locations other than those already used for sampling during the monitoring period.

(g) Monitoring waivers for small systems. Any small system that meets the criteria of this paragraph may apply to the State to reduce the frequency of monitoring for lead and copper under this section to once every nine years (i.e., a "full waiver") if it meets all of the materials criteria specified in paragraph (g)(1) of this section and all of the monitoring criteria specified in paragraph (g)(2) of this section. If State regulations permit, any small system that meets the criteria in paragraphs (g)(1) and (2) of this section only for lead, or only for copper, may apply to the State for a waiver to reduce the

frequency of tap water monitoring to once every nine years for that contaminant only (*i.e.*, a "partial waiver").

(1) Materials criteria. The system must demonstrate that its distribution system and service lines and all drinking water supply plumbing, including plumbing conveying drinking water within all residences and buildings connected to the system, are free of leadcontaining materials and/or coppercontaining materials, as those terms are defined in this paragraph, as follows:

(i) *Lead.* To qualify for a full waiver, or a waiver of the tap water monitoring requirements for lead (*i.e.*, a "lead waiver"), the water system must provide certification and supporting documentation to the State that the system is free of all lead-containing materials, as follows:

(A) It contains no plastic pipes which contain lead plasticizers, or plastic service lines which contain lead plasticizers; and

(B) It is free of lead service lines, lead pipes, lead soldered pipe joints, and leaded brass or bronze alloy fittings and fixtures, unless such fittings and fixtures meet the specifications of any standard established pursuant to 42 U.S.C. 300g-6(e) (SDWA section 1417(e)).

(ii) *Copper*. To qualify for a full waiver, or a waiver of the tap water monitoring requirements for copper (*i.e.*, a "copper waiver"), the water system must provide certification and supporting documentation to the State that the system contains no copper pipes or copper service lines.

(2) Monitoring criteria for waiver issuance. The system must have completed at least one 6-month round of standard tap water monitoring for lead and copper at sites approved by the State and from the number of sites required by paragraph (c) of this section and demonstrate that the 90th percentile levels for any and all rounds of monitoring conducted since the system became free of all lead-containing and/ or copper-containing materials, as appopriate, meet the following criteria.

(i) *Lead levels.* To qualify for a full waiver, or a lead waiver, the system must demonstrate that the 90th percentile lead level does not exceed 0.005 mg/L.

§ 141.86

#### § 141.86

(ii) *Copper levels*. To qualify for a full waiver, or a copper waiver, the system must demonstrate that the 90th percentile copper level does not exceed 0.65 mg/L.

(3) State approval of waiver application. The State shall notify the system of its waiver determination, in writing, setting forth the basis of its decision and any condition of the waiver. As a condition of the waiver, the State may require the system to perform specific activities (e.g., limited monitoring, periodic outreach to customers to remind them to avoid installation of materials that might void the waiver) to avoid the risk of lead or copper concentration of concern in tap water. The small system must continue monitoring for lead and copper at the tap as required by paragraphs (d)(1) through (d)(4) of this section, as appropriate, until it receives written notification from the State that the waiver has been approved.

(4) Monitoring frequency for systems with waivers. (i) A system with a full waiver must conduct tap water monitoring for lead and copper in accordance with paragraph (d)(4)(iv) of this section at the reduced number of sampling sites identified in paragraph (c) of this section at least once every nine years and provide the materials certification specified in paragraph (g)(1) of this section for both lead and copper to the State along with the monitoring results. Samples collected every nine years shall be collected no later than every ninth calendar year.

(ii) A system with a partial waiver must conduct tap water monitoring for the waived contaminant in accordance with paragraph (d)(4)(iv) of this section at the reduced number of sampling sites specified in paragraph (c) of this section at least once every nine years and provide the materials certification specified in paragraph (g)(1) of this section pertaining to the waived contaminant along with the monitoring results. Such a system also must continue to monitor for the non-waived contaminant in accordance with requirements of paragraph (d)(1) through (d)(4) of this section, as appropriate.

(iii) Any water system with a full or partial waiver shall notify the State in writing in accordance with 141.90(a)(3)

#### 40 CFR Ch. I (7–1–11 Edition)

of any upcoming long-term change in treatment or addition of a new source, as described in that section. The State must review and approve the addition of a new source or long-term change in water treatment before it is implemented by the water system. The State has the authority to require the system to add or modify waiver conditions (e.g., require recertification that the system is free of lead-containing and/or copper-containing materials, require additional round(s) of monitoring), if it deems such modifications are necessary to address treatment or source water changes at the system.

(iv) If a system with a full or partial waiver becomes aware that it is no longer free of lead-containing or copper-containing materials, as appropriate, (e.g., as a result of new construction or repairs), the system shall notify the State in writing no later than 60 days after becoming aware of such a change.

(5) Continued eligibility. If the system continues to satisfy the requirements of paragraph (g)(4) of this section, the waiver will be renewed automatically, unless any of the conditions listed in paragraph (g)(5)(i) through (g)(5)(ii) of this section occurs. A system whose waiver has been revoked may re-apply for a waiver at such time as it again meets the appropriate materials and monitoring criteria of paragraphs (g)(1) and (g)(2) of this section.

(i) A system with a full waiver or a lead waiver no longer satisfies the materials criteria of paragraph (g)(1)(i) of this section or has a 90th percentile lead level greater than 0.005 mg/L.

(ii) A system with a full waiver or a copper waiver no longer satisfies the materials criteria of paragraph (g)(1)(ii) of this section or has a 90th percentile copper level greater than 0.65 mg/L.

(iii) The State notifies the system, in writing, that the waiver has been revoked, setting forth the basis of its decision.

(6) Requirements following waiver revocation. A system whose full or partial waiver has been revoked by the State is subject to the corrosion control treatment and lead and copper tap water monitoring requirements, as follows:

#### **Environmental Protection Agency**

(i) If the system exceeds the lead and/ or copper action level, the system must implement corrosion control treatment in accordance with the deadlines specified in §141.81(e), and any other applicable requirements of this subpart.

(ii) If the system meets both the lead and the copper action level, the system must monitor for lead and copper at the tap no less frequently than once every three years using the reduced number of sample sites specified in paragraph (c) of this section.

(7) *Pre-existing waivers*. Small system waivers approved by the State in writing prior to April 11, 2000 shall remain in effect under the following conditions:

(i) If the system has demonstrated that it is both free of lead-containing and copper-containing materials, as required by paragraph (g)(1) of this section and that its 90th percentile lead levels and 90th percentile copper levels meet the criteria of paragraph (g)(2) of this section, the waiver remains in effect so long as the system continues to meet the waiver eligibility criteria of paragraph (g)(5) of this section. The first round of tap water monitoring conducted pursuant to paragraph (g)(4) of this section shall be completed no later than nine years after the last time the system has monitored for lead and copper at the tap.

(ii) If the system has met the materials criteria of paragraph (g)(1) of this section but has not met the monitoring criteria of paragraph (g)(2) of this section, the system shall conduct a round of monitoring for lead and copper at the tap demonstrating that it meets the criteria of paragraph (g)(2) of this section no later than September 30, 2000. Thereafter, the waiver shall remain in effect as long as the system meets the continued eligibility criteria of paragraph (g)(5) of this section. The first round of tap water monitoring conducted pursuant to paragraph (g)(4)of this section shall be completed no later than nine years after the round of monitoring conducted pursuant to paragraph (g)(2) of this section.

[56 FR 26548, June 7, 1991; 56 FR 32113, July 15, 1991; 57 FR 28788, June 29, 1992; as amended at 65 FR 2007, Jan. 12, 2000; 72 FR 57817, Oct. 10, 2007]

### § 141.87 Monitoring requirements for water quality parameters.

§141.87

All large water systems, and all small- and medium-size systems that exceed the lead or copper action level shall monitor water quality parameters in addition to lead and copper in accordance with this section. The requirements of this section are summarized in the table at the end of this section.

(a) General requirements—(1) Sample collection methods. (i) Tap samples shall be representative of water quality throughout the distribution system taking into account the number of persons served, the different sources of water, the different treatment methods employed by the system, and seasonal variability. Tap sampling under this section is not required to be conducted at taps targeted for lead and copper sampling under §141.86(a). [Note: Systems may find it convenient to conduct tap sampling for water quality parameters at sites used for coliform sampling under 40 CFR 141.21.]

(ii) Samples collected at the entry point(s) to the distribution system shall be from locations representative of each source after treatment. If a system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (*i.e.*, when water is representative of all sources being used).

(2) Number of samples. (i) Systems shall collect two tap samples for applicable water quality parameters during each monitoring period specified under paragraphs (b) through (e) of this section from the following number of sites.

System size (No. people served)	No. of sites for water quality parameters
>100,000	25
10,001–100,000	10
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1
≤100	1

(ii) Except as provided in paragraph (c)(3) of this section, systems shall collect two samples for each applicable water quality parameter at each entry AUTHENTICATED U.S. GOVERNMENT INFORMATION

Response Attachment PA-I-13.A

contaminant in the request demonstrating that the contaminants or their parent compounds do not occur naturally in the State, and certifying that during the past 15 years they have not been used, applied, stored, disposed of, released, or detected in the source waters or distribution systems in the State.

(ii) Approval. EPA will review State applications and notify the State whether it accepts or rejects the request. The State must receive written approval from EPA before issuing a State-wide waiver.

[72 FR 393, Jan. 4, 2007; 72 FR 3916, Jan. 26, 2007]

#### §141.41 Special monitoring for sodium.

(a) Suppliers of water for community public water systems shall collect and analyze one sample per plant at the entry point of the distribution system for the determination of sodium concentration levels; samples must be collected and analyzed annually for systems utilizing surface water sources in whole or in part, and at least every three years for systems utilizing solely ground water sources. The minimum number of samples required to be taken by the system shall be based on the number of treatment plants used by the system, except that multiple wells drawing raw water from a single aquifer may, with the State approval, be considered one treatment plant for determining the minimum number of samples. The supplier of water may be required by the State to collect and analyze water samples for sodium more frequently in locations where the sodium content is variable.

(b) The supplier of water shall report to EPA and/or the State the results of the analyses for sodium within the first 10 days of the month following the month in which the sample results were received or within the first 10 days following the end of the required monitoring period as stipulated by the State, whichever of these is first. If more than annual sampling is required the supplier shall report the average sodium concentration within 10 days of the month following the month in which the analytical results of the last sample used for the annual average was

#### 40 CFR Ch. I (7–1–11 Edition)

received. The supplier of water shall not be required to report the results to EPA where the State has adopted this regulation and results are reported to the State. The supplier shall report the results to EPA where the State has not adopted this regulation.

(c) The supplier of water shall notify appropriate local and State public health officials of the sodium levels by written notice by direct mail within three months. A copy of each notice required to be provided by this paragraph shall be sent to EPA and/or the State within 10 days of its issuance. The supplier of water is not required to notify appropriate local and State public health officials of the sodium levels where the State provides such notices in lieu of the supplier.

(d) Analyses for sodium shall be conducted as directed in 141.23(k)(1).

[45 FR 57345, Aug. 27, 1980, as amended at 59 FR 62470, Dec. 5, 1994]

## §141.42 Special monitoring for corrosivity characteristics.

(a)–(c) [Reserved]

(d) Community water supply systems shall identify whether the following construction materials are present in their distribution system and report to the State:

Lead from piping, solder, caulking, interior lining of distribution mains, alloys and home plumbing.

Copper from piping and alloys, service lines, and home plumbing.

Galvanized piping, service lines, and home plumbing.

Ferrous piping materials such as cast iron and steel.

Asbestos cement pipe.

In addition, States may require identification and reporting of other materials of construction present in distribution systems that may contribute contaminants to the drinking water, such as:

Vinyl lined asbestos cement pipe.

Coal tar lined pipes and tanks.

[45 FR 57346, Aug. 27, 1980; 47 FR 10999, Mar. 12, 1982, as amended at 59 FR 62470, Dec. 5, 1994]

### §141.43 Prohibition on use of lead pipes, solder, and flux.

(a) In general—(1) Prohibition. Any pipe, solder, or flux, which is used after

# CDC IN YOUR NEIGHBORHOOD: Childhood Blood Lead Research Study

In 2014, we conducted a health study to evaluate the association between lead in the environment and blood lead levels in children living in some neighborhoods in Philadelphia near the former John T. Lewis facility. This fact sheet explains how we conducted the study, what we found, and how you can learn more.

### **Study Looks at Lead Contamination**

In July 2014, several agencies conducted a childhood blood lead study in selected Philadelphia neighborhoods near the former John T. Lewis facility. The purpose of the study was to:

- evaluate the relationship between blood lead levels and potential lead contamination in tap water, soil, and dust in children's homes and yards
- determine if young children in the community were exposed to elevated levels of lead, and
- help scientists develop better ways of identifying lead exposure in young children where they live.

(The agencies involved in the study included the Philadelphia Department of Public Health [PDPH], the Centers for Disease Control [CDC]/Agency for Toxic Substances and Disease Registry [ATSDR], the Pennsylvania Department of Health [PADOH], and the U.S. Environmental Protection Agency [EPA].)

### A History of Lead at the Study Site

The John T. Lewis site, most recently known as the Anzon site, is located in the Kensington area of Philadelphia. Lead paint production and lead smelting operations were conducted at the site for nearly 150 years (from 1849 to 1996). Plant emissions, equipment malfunctions, and fires at the facility released lead into the surrounding community. In addition to the John T. Lewis facility, a number of other industrial sources of lead used to operate in this community.

Residential homes have always been located nearby the facility. And, in the late 1990s and early 2000s, the facility grounds were redeveloped into a multiuse commercial complex. Although there is no specific health hazard currently known for the full study area, a limited number of soil samples from residential yards showed elevated lead levels.

#### What is lead?

Lead is a naturally occurring metal. It is used in products such as batteries and ammunition. Lead in ceramic products, caulking, and pipe solder has been dramatically reduced in recent years because of health concerns. The use of lead as an additive to gasoline was banned in 1996 in the United States.

In 1978, the federal government banned the use of lead containing paint. But if your home was built before 1978, it may have lead based paint. Lead from paint, including lead contaminated dust, is one of the most common causes of lead exposure.

Lead remains in the environment and does not break down. Historical lead contamination from a variety of sources remains a concern in urban areas.

### How We Conducted the Study

We recruited participants for the study during a two week period in July 2014. We selected households at random from various neighborhoods near the site, including Port Richmond, Kensington, and Northern Liberties. If the head of the household agreed to participate in the study, we did 4 things:

1) We collected tap water, soil, and indoor dust samples, and then we then analyzed the samples for lead.

National Center for Environmental Health Agency for Toxic Substances and Disease Registry



- 2) We took a free blood sample from children who were from 9 months through 6 years of age and lived in the participating households.
- 3) We asked the heads of households/guardians of children enrolled in the study to answer questions on factors potentially associated with lead exposure and other environmental hazards.
- 4) We conducted a Healthy Homes survey at each enrolled household.

(EPA Region 3 collaborated with the public health agencies and provided funding to conduct the study.)

# What We Learned from the Study Blood Lead Results

If a child has 5 or more micrograms of lead per deciliter of their blood ( $\mu$ g/dL), they have an elevated blood lead level. This is called a reference value, and it's the measurement that CDC uses to identify children with elevated blood lead. About 2.5% children in the United States have a blood lead level equal to or above 5  $\mu$ g/dL.

Protecting children from exposure to lead is important to lifelong good health. There is no safe level of lead in children s blood. Even low levels of lead in blood have been shown to affect IQ, ability to pay attention, and academic achievement. The effects of lead exposure cannot be corrected.

Here's what the blood tests showed about the 126 children included in our study:

- The highest blood lead result was 11  $\mu$ g/dL.
- The geometric mean (which is a special type of average) was 1.96 μg/dL.
- About 11-13% of the children from the study had an elevated blood lead level of 5 μg/dL or above (estimates vary with different children's age ranges included in the analysis).

#### **Environmental Sample Results**

Figure 1 below describes how many samples we collected for this study. It also shows what is considered an elevated level for each type of sample and how many of the samples in this study exceeded that elevated level. Finally, it shows the range of lead that we detected in the samples and the average (or "mean") level of lead we found in the samples.

Figure 1: John T. Lewis 2014 Research Study Summary of Environmental Sample Results

Environmental Sample Type	Number of Samples	Elevated Lead Level Definition	Number of Samples Exceeding Elevated Lead Level	Minimum and Maximum Concentrations Detected	Mean
Soil	72	*400 ppm	51 (71%)	40 – 7,700 ppm	774 ppm
Water	120	**15 µ/L	0	Non-detect – 3.9 µg/L	N/A
Dust Floor (Front Door)	119	*40 μg/ft²	26 (22%)	Non-detect – 2,300 µg/ft²	56 µg/ft²
Dust Floor (Child Play Area)	116	*40 µg/ft²	21 (18%)	Non-detect – 630 µg/ft²	33 µg/ft²
Dust Window (Child Room)	106	*250 μg/ft²	13 (12%)	Non-detect – 18,000 µg/ft²	356 µg/ft²

\*Definition of elevated soil and dust wipe sample results are EPA's standards under the Lead Renovation, Repair and Painting rule

\*\*Definition of elevated water result based on EPA's action level for lead under the Lead and Copper rule

### **Conclusions from the Study**

# Children living in the investigation area are 6 times more likely to have blood lead levels equal or above 5 $\mu$ g/dL compared to the U.S. childhood population.

We compared the blood lead data from this investigation to a national survey that CDC conducts called the National Health and Nutrition Examination survey, or NHANES. Generally, children in northeastern U.S. urban areas tend to have higher blood lead levels than children living in less urban areas. The blood lead data from this investigation are not directly comparable to the City of Philadelphia's blood lead surveillance information, so a city-specific interpretation is not possible at this time. The data are not comparable because the study and the City of Philadelphia use different methods to identify, collect, and, report childhood blood lead data.

Environmental factors and elevated blood lead are strongly linked when the front door area has dust with high levels of lead and when the household also has two environmental samples (such as soil and window sill dust) with elevated levels of lead.

Environmental factors included soil, dust, and water results. We considered lead levels in dust to be high if they were above EPA's standard. At this time, it is not possible to identify the environmental source(s) of the lead found in this investigation.

### **Recommendations and Next Steps**

CDC/ATSDR continues to help area residents understand the health risks associated with lead and the steps they can take to protect themselves. And we will continue to provide scientific assistance to EPA and the local and state health departments to further evaluate the results from this study.

CDC/ATSDR will continue to work with pediatricians and other health care

providers to make sure young children living near the site routinely have blood lead tests. **Parents should have children tested for blood lead.** The Philadelphia Department of Public Health recommends all children in Philadelphia should be screened for lead at ages 12 and 24 months or at 36-72 months if there is not proof of prior screening, and that foreign-born children residing in Philadelphia (refugee and immigrant) should be tested within 60 days of arrival and again at 3 months after arrival, regardless of age, up to age 6 years.

EPA is conducting experiments to identify how much of the lead found in soil has the potential to be absorbed by the body. This will allow scientists to better assess the potential impact of people's exposure to lead in soil. Agency scientists are also using the study data to find better ways of determining if the community near the JT Lewis site and other communities have been exposed to lead at levels of health concern. Updates on this ongoing work will be posted on CDC/ATSDR's website.

### Where Can I Learn More?

Agency representatives are available to answer questions. You can contact them by telephone or email:

- Ana Pomales (ATSDR) 215-814-5716 or <u>APomales@cdc.gov</u>
- **Paulette Smith** (Philadelphia Department of Public Health) at 215-685-2788 or <u>Paulette.Smith@phila.gov</u>
- Jack Kelly (EPA) 215-514-6792 or <u>Kelly.Jack@epa.gov</u>

Find out more about this study, and things you can do to protect your family from lead exposure at http://www.atsdr.cdc.gov/si tes/jtlewis/index.html

All young children who live in Philadelphia (including the study area), should be tested for lead periodically (http://www.phila.gov/ health/childhoodlead/in dex.html).

## **DID YOU KNOW?**

### Lead poisoning can affect nearly every system in the body.

- Lead poisoning occurs with no obvious symptoms and frequently goes unrecognized.
  - Children under the age of six years are at the greatest risk for lead poisoning.
  - Brains and nervous systems are still undergoing development.
- If left unchecked, very high or elevated blood lead levels can result in brain and nervous system damage, slowed growth as well as behavior and learning problems.
- Pregnant women also should avoid lead exposure.
  - Lead can easily cross the placenta and may be very harmful to an unborn child.

### Lead poisoning is preventable.

- No safe blood lead level in children has been identified.
- Parents can take simple steps make their homes more lead-safe.
  - Wash children's hands and feet after they have been playing outside
  - Wash children's toys regularly
  - Remove recalled toys and toy jewelry from children
  - Wipe shoes on doormat or remove them before going inside
  - Damp/wet mop floors and damp dust counters and furniture regularly
  - Eliminate paint chips or dust in windowsills, clean these areas regularly with a damp/wet mop.
  - If you live in a home built before 1978, talk to your local health department about testing paint and dust in your home for lead.

### Public health resources about lead exposure.

- The Centers for Disease Control and Prevention (CDC)
  - Lead Poisoning Prevention web site, visit: <u>http://www.cdc.gov/nceh/lead</u>
  - Lead in water, visit: <u>http://www.cdc.gov/nceh/lea/tips/water.htm</u>
- Environmental Protection Agency (EPA) and Housing and Urban Development (HUD)
  - Lead-safe renovation, visit: <u>http://www2.epa.gov/lead/renovation-repair-and-painting-program</u> or <u>http://www.hud.gov/lead</u>
- Consumer Product Safety Commission (CPSC)
  - Toy and toy jewelry recalls, visit: <u>http://www.cpsc.gov</u>